

**Data Evaluation Report on the Acute Toxicity of Ipconazole to Algae, *Pseudokirchneriella subcapitata***

EPA MRID Number 49910310

<b>Data Requirement:</b>	EPA DP Barcode	434137
	EPA MRID	49910310
	EPA Guideline	850.4500
<b>Test material:</b> Ipconazole		<b>Purity:</b> 98.1%
Common name: Ipconazole		
Chemical name: IUPAC: Not reported		
CAS name: (1RS,2SR,5RS; 1RS,2SR,5SR)-2-(4-chlorobenzyl)-5-isopropyl-1-(1H-1,2,4-triazol-1-ylmethyl)cyclopentanol		
CAS No.: Not reported		
Synonyms: Not reported		
<b>Primary Reviewer:</b> Kindra Bozicevich Environmental Scientist, CDM/CSS-Dynamac JV		<b>Signature:</b> <i>Kinsha Bozicevich</i> <b>Date:</b> 4/19/17
<b>Secondary Reviewer:</b> Elizabeth Krupka Senior Scientist, CDM/CSS-Dynamac JV		<b>Signature:</b> <i>Elizabeth Krupka</i> <b>Date:</b> 5/5/17
<b>Primary Reviewer:</b> Holly Rogers Biologist, EPA/OPP/EFED/ERB5		<b>Signature:</b> <b>Date:</b> 05/04/2020
<b>Secondary Reviewer(s):</b> Hannah Yingling Biologist, USEPA/OPP/EFED/ERB5		<b>Date:</b> 04/28/2020 <i>Hannah B. Yingling</i>

**EPA PC Code** 125618

**Date Evaluation Completed:** 09-04-2020

**CITATION:** Flatman, D. 2006. Ipconazole Algal Growth Inhibition Assay. Unpublished study performed by Huntingdon Life Sciences Ltd., Cambridgeshire, England. Project Identity: KRA 131. Study sponsored by Kureha Corporation, Chemicals & Agrochemicals Planning & Development Department, Tokyo, Japan. Study initiated June 14, 2005 and completed October 5, 2006.

*This Data Evaluation Record may have been altered by the Environmental Fate and Effects Division subsequent to signing by CDM/CSS-Dynamac JV personnel.*

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## **EXECUTIVE SUMMARY:**

In a 96-hour acute toxicity study, cultures of freshwater green algae, *Pseudokirchneriella subcapitata* strain CCAP 278/4, were exposed to Ipconazole at nominal concentrations of 0 (negative and solvent controls), 0.046, 0.10, 0.22, 0.46, 1.0, and 2.2 mg/L under static conditions. The mean-measured concentrations were <0.01 (<LOD; negative and solvent controls), 0.043, 0.095, 0.21, 0.41, 0.98, and 2.3 mg ai/L.

The percent growth inhibition of cell density in the treated algal culture, as compared to the negative control, ranged from -87.3 to 88.6%. The percent growth inhibition of cell density in the treated algal culture, as compared to the solvent control, ranged from -20.7 to 92.7%. The NOAEC value for all endpoints (yield, average specific growth rate, and area under the growth curve) was 0.21 mg ai/L, based on the mean-measured concentrations. After 96 hours, the most sensitive endpoint was yield, with NOAEC and IC<sub>50</sub> values of 0.21 and 0.65 mg ai/L, respectively, based on the mean-measured concentrations.

There was a significant effect of the solvent (tetrahydrofuran) on the growth of the algae, as shown by significant increases in all growth endpoints (area under the curve, yield, and average specific growth rate) for the solvent control as compared to the negative control. Because of this significant solvent effect, the treatment data were analyzed twice, first for comparison to the negative control and then for comparison to the solvent control. The lower values for the IC<sub>50</sub>, NOAEC, and LOAEC resulting from comparison of the treatments to the solvent control are considered more conservative for evaluating potential effects of ipconazole on algal growth.

The full dose-response was not captured by the study author when the treatment data are compared to the negative control data. The 0.98 mg ai/L test level was the first to demonstrate inhibitions in growth for yield and area under the curve, with inhibitions already approximately 50% as compared to the negative control. The nonlinear regression analyses conducted for all endpoints indicated significant lack of fit when comparing to both the negative and solvent controls. The analyses for yield and area under the curve compared to the negative control could not produce valid 95% confidence intervals for the IC<sub>50</sub>. In order to adequately capture the IC<sub>50</sub> when comparing to the negative control, a test with concentrations ranging between nominal 1.0 and 2.2 mg ai/L would need to be conducted.

No morphological abnormalities were observed. There were no compound-related phytotoxic effects. There were no increases in pH during the test.

Although this study **is scientifically sound**, it is classified as **supplemental (quantitative)**, because of the solvent effect (i.e. stimulation of growth). This study can be used quantitatively because there was a dose response in algal growth.

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## Results Synopsis

Test Organism: Freshwater green algae, *Pseudokirchneriella subcapitata* strain CCAP 278/4

Test Type (Flow-through, Static, Static Renewal): Static

**Table 1: Statistical endpoint values comparing treatments to the negative control and to the solvent control.**

Endpoint	Comparison to the negative control			Comparison to the solvent control		
	Area under the curve (AUC)	Yield	Average Specific Growth Rate	Area under the curve (AUC)	Yield	Average Specific Growth Rate
IC <sub>05</sub> (mg ai/L)	0.73	0.60	0.39	0.20 <sup>c</sup>	0.22 <sup>c</sup>	0.29
IC <sub>05</sub> 95% C.I. (mg ai/L)	0.38 – 1.2	0.27 – 0.92	0.24 – 0.52	N/A – 0.29	N/A – 0.32	0.21 – 0.36
IC <sub>50</sub> (mg ai/L)	1.6 <sup>a</sup>	1.2 <sup>a</sup>	2.5 <sup>b</sup>	0.71	0.65	2.43 <sup>b</sup>
IC <sub>50</sub> 95% C.I. (mg ai/L)	0.93 – N/A	0.77 – N/A	2.1 – 2.9	0.56 – 0.90	0.51 – 0.85	2.16 – 2.73
NOAEC (mg ai/L)	0.41	0.41	0.41	0.21	0.21	0.21
LOAEC (mg ai/L)	0.98	0.98	0.98	0.41	0.41	0.41
Probit slope	N/A	N/A	N/A	N/A	N/A	N/A

\*The mean measurements of AUC, yield, and growth rate at 96 hours for the solvent control were all statistically higher than corresponding mean measurements for the negative control.

(a) IC<sub>50</sub> value should be interpreted with caution because the 95% confidence limits could not be fully determined

(b) IC<sub>50</sub> value should be interpreted with caution, as it is not bracketed by the test concentrations

(c) IC<sub>05</sub> value should be interpreted with caution because the 95% confidence limits could not be fully determined

Most Sensitive Endpoint: Yield

Endpoint(s) Affected: Yield, Average Specific Growth Rate, and AUC

IC<sub>50</sub>: 0.65 mg ai/L

95% C.I.: 0.51 – 0.85 mg ai/L

NOAEC: 0.21 mg ai/L

LOAEC: 0.41 mg ai/L

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## **I. MATERIALS AND METHODS**

### **GUIDELINE FOLLOWED:**

The study was performed according to OPPTS Guideline 850.5400 Draft (1996); OECD Guideline 201 (1984); EC Methods for Determination of Ecotoxicity, Annex to Directive 92/69/EEC, Part C, Method 3 (1992); and the Japanese MAFF 12 Nohsan No 8147 (2000). The following deficiencies and deviations from the U.S. EPA OCSPP 850.4500 (2012) guideline are noted:

1. There were statistically significant differences between the negative and solvent controls for all endpoints, with the solvent control exhibiting promotion of growth as compared to the negative control (55, 75, and 8% for yield, area under the curve, and average specific growth rate, respectively). The solvent appeared to mask the effects of the test material in the first 5 test levels for yield and area under the curve, culminating in actual promotion of growth in yield ranging from 15 to 88% and in area under the curve ranging from 29 to 101%.
2. The full dose-response was not captured by the study author when the treatment data are compared to the negative control data. The 0.98 mg ai/L test level was the first to demonstrate inhibitions in growth for yield and area under the curve, with inhibitions already approximately 50% as compared to the negative control. The nonlinear regression analyses conducted for all endpoints indicated significant lack of fit when comparing to both the negative and solvent controls. The analyses for yield and area under the curve compared to the negative control could not produce valid 95% confidence intervals for the IC<sub>50</sub>. In order to adequately capture the IC<sub>50</sub> when comparing to the negative control, a test with concentrations ranging between nominal 1.0 and 2.2 mg ai/L would need to be conducted.
3. The solvent used (tetrahydrofuran) was not the recommended solvent, N,N-dimethyl-formamide (DMF), in OCSPP 850.4500.
4. The age of the inoculum at test initiation was not reported.
5. The health/condition of the inoculum culture was not described. The inoculum should be from a logarithmically growing stock culture.
6. Only 3 replicates were used for each treatment level (6 replicates for the negative and solvent controls). A minimum of 4 replicates per level is recommended.
7. The pH, and total organic carbon, particulate matter, metals, pesticides, and chlorine concentrations of the dilution water were not reported.

These deviations **do** affect the validity of the study.

### **COMPLIANCE:**

Signed and dated GLP, Quality Assurance and No Data Confidentiality statements were provided. The study was performed in accordance with the UK GLP, OECD Principles of GLP the EC Commission Directive 2004/10/EC.

## **A. MATERIALS:**

**1. Test material** Ipconazole

**Description:** White powder

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**Lot No./Batch No. :** 89010

**Purity:** 98.1%

**Stability of compound under test conditions:** The test substance was relatively stable under test conditions. The 96-hour measured concentrations ranged from 73 to 95% of the initial-measured concentrations.

(OECD recommends water solubility, stability in water and light, pKa, Pow, and vapor pressure of test compound)

**Storage conditions of test chemicals:** Stored at room temperature, protected from light.

## Physicochemical properties of Ipconazole.

Parameter	Values	Comments
Water solubility at 20°C	Not reported	
Vapor pressure	Not reported	
UV absorption	Not reported	
pKa	Not reported	
Kow	Not reported	

## 2. Test organism:

**Name:** Freshwater green algae, *Pseudokirchneriella subcapitata*

EPA requires a nonvascular species: For tier I testing, only one species, *S. capricornutum*, to be tested; for tier II testing, *S. costatum*, *A. flos-aquae*, *S. capricornutum*, and a freshwater diatom is tested.

OECD suggests the following species are considered suitable: *S. capricornutum*, *S. subspicatus*, and *C. vulgaris*. If other species are used, the strain should be reported

**Strain:** CCAP 278/4

**Source:** The Culture Collection of Algae & Protozoa (CCAP), SAMS Research Services Ltd., Argyll , Scotland.

**Age of inoculum:** Not reported

**Method of cultivation:** Cultured in nutrient medium under continuous illumination (7930-8100 lux) in an orbital incubator maintained at 21-24°C.

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## B. STUDY DESIGN:

### 1. Experimental Conditions

a. Range-finding study: A preliminary range-finding test was conducted at nominal concentrations of 0.008, 0.08, 0.8, and 8.0 mg/L to determine the concentrations of the test substance to be used in the definitive study. Chemical analysis of fresh and expired samples of the highest test solution showed that the mean measured value of 6.2 mg/L was achieved. As the lower test solutions were serially diluted at orders of magnitude from this stock, the actual concentrations tested were assumed to be 0.0062, 0.062, 0.62 and 6.2 mg/L. The dose response seen during this range-finding test indicated that the 72-hour EC<sub>50</sub> values were likely to approximate to 0.62 mg/L. Based on these results, nominal concentrations of 0.046, 0.10, 0.22, 0.46, 1.0, and 2.2 mg/L were selected for use in the definitive study.

b. Definitive Study

**Table 2: Experimental Parameters**

Parameter	Details	Remarks
		Criteria
Acclimation period:	Continuously cultured	
Culturing media and conditions: (same as test or not)	Cultured under continuous illumination (7930-8100 lux) at 21-24°C. The definitive test was conducted under continuous illumination (4330-5360 lux) at 23-24°C.	<i>EPA recommends two week acclimation period.</i> <i>OECD recommends an amount of algae suitable for the inoculation of test cultures and incubated under the conditions of the test and used when still exponentially growing, normally after an incubation period of about 3 days. When the algal cultures contain deformed or abnormal cells, they must be discarded.</i>
Health: (any mortality observed)	Not reported	
<u>Test system</u> Static/static renewal	Static	
Renewal rate for static renewal	N/A	<i>EPA expects the test concentrations to be renewed every 3 to 4 days (one renewal for the 7 day test, 3-4 renewals for the 14 day test).</i>
Incubation facility	Temperature-controlled orbital incubator	
Duration of the test	96 hours	

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Parameter	Details	Remarks
		Criteria
		<i>EPA requires: 96-120 hours OECD: 72 hours</i>
<u>Test vessel</u> Material: (glass/stainless steel) Size: Fill volume:	Glass 250 mL 100 mL	Conical flasks loosely stoppered  <i>OECD recommends 250 ml conical flasks are suitable when the volume of the test solution is 100 ml or use a culturing apparatus.</i>
<u>Details of nutrient medium (OECD algal medium):</u> pH at test initiation: pH at test termination: Chelator used: Carbon source: Salinity (for marine algae):	7.7 8.8 to 8.9 Na <sub>2</sub> EDTAx2H <sub>2</sub> O NaHCO <sub>3</sub> N/A	<i>OECD recommends the medium pH after equilibration with air is ~8 with less than .001 mmol/l of chelator if used.</i>  <i>EPA recommends 20X-AAP and chelating agents (e.g. EDTA) in the nutrient medium for optimum cell growth. Lower concentrations of chelating agents (down to one-third of the normal concentration recommended for AAP medium) may be used in the nutrient medium used for test solution preparation if it is suspected that the chelator will interact with the test material. ASTM reference, E1415-91 and D 3978-80 (reapproved 1987).</i>
If non-standard nutrient medium was used, detailed composition provided (Yes/No)	A non-standard medium was used and a detailed composition was provided.	
Dilution water		

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Parameter	Details	Remarks
		Criteria
source/type: pH: salinity ( <b>for marine algae</b> ): water pretreatment (if any): Total Organic Carbon: particulate matter: metals: pesticides: chlorine:	Deionized water Not reported N/A Reverse osmosis purified Not reported Not reported Not reported Not reported Not reported	<p>EPA pH: <u>Skeletonema costatum</u> = ~8.0 Others = ~7.5 from beginning to end of the test. EPA salinity: 30-35 ppt. EPA is against the use of dechlorinated water.</p> <p>OECD: pH is measured at beginning of the test and at 72 hours, it should not normally deviate by more than one unit during the test.</p>
Indicate how the test material is added to the medium (added directly or used stock solution)	A 50 mg/mL stock solution was prepared by adding 2500 mg of the test item to 50 mL tetrahydrofuran (THF). The stock solution was further diluted with THF to give a solvent stock series of 0.46, 1.0, 2.2, 4.6, 10, and 22 mg/mL. Aliquots (100 µL) of these stock solutions were added separately to 1000 mL of nutrient medium to give the nominal test concentrations.	
Aeration or agitation	Orbital shaker platform at 130 rpm	
Initial cells density	1.2 to 1.4 x10 <sup>4</sup> cells/mL	<p>EPA requires an initial number of 3,000 - 10,000 cells/mL. For <i>Anabaena flos-aquae</i>, cell counts on day 2 are not required.</p> <p>OECD recommends that the initial cell concentration be approximately 10,000 cells/ml for <u>S. capricornutum</u> and <u>S. subspicatus</u>. When other species are used the biomass should be comparable.</p>

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Parameter	Details	Remarks
		<i>Criteria</i>
<u>Number of replicates</u> Control: Solvent control: Treatments:	6 6 3	<p><i>EPA requires a negative and/or solvent control with 4 or more replicates per doses. <i>Navicula</i> sp. tests should be conducted with four replicate.</i></p> <p><i>OECD preferably three replicates at each test concentration and ideally twice that number of controls. When a vehicle is used to solubilize the test substance, additional controls containing the vehicle at the highest concentration used in the test.</i></p>
<u>Test concentrations</u> Nominal:  Mean measured:	0 (negative and solvent controls), 0.046, 0.10, 0.22, 0.46, 1.0, and 2.2 mg/L  <0.01 (<LOD; negative and solvent controls), 0.043, 0.095, 0.21, 0.41, 0.98, and 2.3 mg ai/L	<p><i>EPA requires at least 5 test concentrations, with each at least 60% of the next higher one.</i></p> <p><i>OECD recommends at least five concentrations arranged in a geometric series, with the lowest concentration tested should have no observed effect on the growth of the algae. The highest concentration tested should inhibit growth by at least 50% relatively to the control and, preferably, stop growth completely.</i></p>
Solvent (type, percentage, if used)	Tetrahydrofuran (THF)	<p><i>EPA recommends use of DMF as the solvent, if needed.</i></p>

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Parameter	Details	Remarks
		Criteria
Method and interval of analytical verification	Select test concentrations were measured at 0 and 96 hours using HPLC analysis.	
<u>Test conditions</u> Temperature: Photoperiod: Light intensity and quality:	23.3 to 24.3°C Continuous 4330-5360 lux fluorescent light	<p>EPA temperature: <i>Skeletonema</i>: 20EC, Others: 24-25EC; EPA photoperiod: <i>S. costatum</i> 14 hr light/ 10 hr dark, Others: Continuous; EPA light: <i>Anabaena</i>: 2.0 Klux (<math>\pm 15\%</math>), Others: 4 - 5 Klux (<math>\pm 15\%</math>)</p> <p>OECD recommended the temperature in the range of 21 to 25°C maintained at <math>\pm 2^\circ\text{C}</math> and continuous uniform illumination provided at approximately 8000 Lux measured with a spherical collector.</p>
<u>Reference chemical (if used)</u> name: concentrations:	N/A	
Other parameters, if any	N/A	

**2. Observations:**

**Table 3: Observation parameters**

Parameters	Details	Remarks
		Criteria
Parameters measured including the growth inhibition/other toxicity symptoms	Cell density Growth rate Area under the curve (AUC)	<p>EPA recommends the growth of the algae expressed as the cell count per mL, biomass per volume, or degree of growth as determined by spectrophotometric means.</p>

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Parameters	Details	Remarks
		Criteria
Measurement technique for cell density and other end points	Cell density was measured by direct counting (Coulter® Multisizer II particle counter). Growth rate was calculated using a logarithmic growth equation. Area under the growth curve was determined by the ratio of cell density at test termination to test initiation.	<i>EPA recommends the measurement technique of cell counts or chlorophyll a</i> <i>OECD recommends the electronic particle counter, microscope with counting chamber, fluorimeter, spectrophotometer, and colorimeter. (note: in order to provide useful measurements at low cell concentrations when using a spectrophotometer, it may be necessary to use cuvettes with a light path of at least 4 cm).</i>
Observation intervals	Every 24 hours.	<i>EPA and OECD: every 24 hours.</i>
Other observations, if any	All test and control cultures were inspected microscopically at 96 hours.	
Indicate whether there was an exponential growth in the control	The initial mean cell density for the negative and solvent controls was $1.19 \times 10^4$ cells/mL. After 96 hours, mean cell densities of the negative and solvent controls were 248 and $384 \times 10^4$ cells/mL, respectively.	The guideline does not provide a minimum value by which the control cell density must increase in order for the study to be considered valid.  <i>EPA requires control cell count at termination to be <math>\geq 2X</math> initial count or by a factor of at least 16 during the test.</i>  <i>OECD: cell concentration in control cultures should have increased by a factor of at least 16 within three days.</i>
Were raw data included?	Yes	

**II. RESULTS and DISCUSSION:**

**A. INHIBITORY EFFECTS:**

The mean 96-hour cell densities were: 2476150, 3840933, 4636667, 3367133, 4285633, 2850600, 1130567, and 282007 cells/mL in the negative control, solvent control, and the 0.043, 0.095, 0.21, 0.41, 0.98, and 2.3 mg ai/L treatments, respectively. The study author did not analyze mean cell density values. Furthermore, the study author did not calculate or analyze yield values.

The mean 0-96 hour growth rate was 0.055/hour and 0.060/hour for the negative and solvent controls, respectively, yielding inhibitions relative to the solvent control of -3.3, 3.7, -0.1, 8.1, 24.1, and 47.8% for the mean measured concentrations of 0.043, 0.095, 0.21, 0.41, 0.98, and 2.3 mg ai/L, respectively. The NOAEC and EC<sub>50</sub> values reported by the study author based on 0-96 hour growth rate were 0.22 and >2.2 mg/L, respectively, in terms of nominal concentrations.

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The mean 0-96 hour AUC value was 49.6 and 86.8 cells/mL for the negative and solvent controls, respectively, yielding inhibitions relative to the solvent control of -14.6, 15.3, -10.3, 26.6, 66.4, and 87.4% for the mean measured concentrations of 0.043, 0.095, 0.21, 0.41, 0.98, and 2.3 mg ai/L, respectively. The NOAEC and EC<sub>50</sub> values reported by the study author based on 0-96 hour AUC were 0.22 and 0.62 mg/L, respectively, in terms of nominal concentrations.

Severely inhibited cultures were re-cultured to determine if the inhibitory effect of the test substance was algicidal or algistatic. Aliquots of 0.5 mL were removed from each replicate culture of the solvent controls and at the two highest test concentrations resulting in severe growth inhibition (0.98 mg ai/L and 2.3 mg ai/L). The replicates were pooled, 100 mL of fresh sterile nutrient medium was added to ensure that the test concentrations were reduced to below the inhibitory level and the subcultures incubated at 23 °C for a further 6 days. Regrowth did occur and consequently the test substance was considered to be algistatic in effect.

No morphological abnormalities were observed. There were no compound-related phytotoxic effects. There were increases in pH during the test.

**Table 4: Effect of Ipconazole on algal growth (freshwater green algae, *Pseudokirchneriella subcapitata*)**

Treatment Mean measured (and nominal) mg ai/L concentrations	Initial cell density ( $\times 10^4$ cells/mL)	Cell density ( $\times 10^4$ cells/mL) at			
		24 hours	48 hours	72 hours	96 hours
Negative control	1.1866	3.6355	14.3596	68.9797	247.6150
Solvent control	1.1926	8.3059	27.9520	137.6442	384.0933
0.043 (0.046)	1.1904	9.0643	31.5553	146.4700	463.6667
0.095 (0.1)	1.2734	7.7693	23.1303	111.7117	336.7133
0.21 (0.22)	1.3238	10.3234	31.2623	147.7650	428.5633
0.41 (0.46)	1.4147	7.4813	22.0667	98.5150	285.0600
0.98 (1.0)	1.4077	6.4357	15.8042	47.8147	113.0567
2.3 (2.2)	1.3863	3.6054	12.3339	20.4463	28.2007
Reference chemical (if used)	N/A				

These data are from the Tables 1 on pages 19 and 20 of the study report.

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**Table 5: Effect of Ipcnazole on algal growth (freshwater green algae, *Pseudokirchneriella subcapitata*)**

Treatment Mean measured (and nominal) mg ai/L concentrations	Initial cell density ( $\times 10^4$ cells/mL)	Mean cell density ( $\times 10^4$ cells/mL) <sup>a</sup>		Mean growth rate (hour <sup>-1</sup> ) <sup>a</sup>		Mean area under the curve (AUC) <sup>a</sup>	
		96 h	% inhibition <sup>b</sup>	0-96 hours	% inhibition	0-96 hours	% inhibition
Negative control	1.1866	247.6150	35.5	0.055	7.5	49.6	42.9
Solvent control	1.1926	384.0933	N/A	0.060	N/A	86.8	N/A
0.043 (0.046)	1.1904	463.6667	-20.7	0.062	-3.3	99.5	-14.6
0.095 (0.1)	1.2734	336.7133	12.3	0.057	3.7	73.6	15.3
0.21 (0.22)	1.3238	428.5633	-11.6	0.060	-0.1	95.8	-10.3
0.41 (0.46)	1.4147	285.0600	25.8	0.055	8.1	63.8	26.6
0.98 (1.0)	1.4077	113.0567	70.6	0.045	24.1	29.2	66.4
2.3 (2.2)	1.3863	28.2007	92.7	0.031	47.8	11.0	87.4

(a) These data are from the Tables 1 and 2 on pages 19-21 of the study report.

(b) Percent inhibition for mean density was calculated by the reviewer relative to the solvent control.

**Table 6: Statistical endpoint values, reported by the study author based on nominal test concentrations.**

Statistical endpoint	Cell density	Yield	Growth rate	Area under the curve (AUC)
NOAEC (mg/L)	Not calculated	Not calculated	0.22	0.22
IC <sub>50</sub> or EC <sub>50</sub> (mg/L) (95% C.I.)	Not calculated	Not calculated	>2.2 (N/A)	0.62 (0.45-0.81)
Reference chemical 72-hour IC <sub>50</sub> /EC <sub>50</sub> (mg/L)	N/A			

### B. REPORTED STATISTICS:

The endpoints evaluated and statistically analyzed by the study author were area under the growth curve and growth rate using SAFEStat CurveFit application, SAS 8.2 (SAS Institute 1999). All 95% confidence intervals for EC<sub>50</sub> were calculated using the likelihood ratio method (Donaldson and Schnabel, 1985). For AUC, Williams' test (1971, 1972) was used to compare each treated group with the solvent control. For growth rate, Dunnett multicomparison test (1955, 1964) was used to compare each treated group with the solvent control. Toxicity values were reported in terms of nominal concentrations.

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## C. VERIFICATION OF STATISTICAL RESULTS:

**Statistical Method:** The reviewer statistically analyzed the 96-hour endpoints for yield, average specific growth rate ( $\text{day}^{-1}$ ), and AUC using CETIS version 1.8.7.12 statistical software using backend database settings implemented by EFED on 10/20/15. The reviewer compared the negative and solvent control data via parametric-two sample test. Significant differences were detected between the two control groups for all endpoints; therefore, treatment data were compared separately to both the negative control and the solvent control. All data were confirmed to be normally distributed and have homogeneous variances using Shapiro-Wilk's and Bartlett's tests, respectively, and were therefore analyzed using William's test (growth rate for both comparisons; AUC and yield for comparison to the solvent control) or Dunnett's test (AUC and yield for comparison to negative control), depending on monotonicity or lack thereof. The IC<sub>x</sub> values were calculated using Bruce-Versteeg regression. All analyses were based on mean measured exposure concentrations.

**Table 7: Effect of Ipconazole on algal growth (freshwater green algae, *Pseudokirchneriella subcapitata*)**

Treatment Mean measured (and nominal) mg ai/L concentrations	Initial cell density ( $\times 10^4$ cells/mL)	Mean growth rate ( $\text{day}^{-1}$ ) <sup>a</sup>		Mean area under the curve (AUC) <sup>b</sup>		Mean yield (based on cell density; $\times 10^4$ cells/mL) <sup>c</sup>	
		0-4 days	% inhibition <sup>d</sup>	0-4 days	% inhibition <sup>d</sup>	0-4 days	% inhibition <sup>d</sup>
Negative control	1.1866	1.334	N/A	207	N/A	246.4284	N/A
Solvent control	1.1926	1.442	-8.1	362	-75.1	382.9007	-55.4
0.043(0.046)	1.1904	1.490	-11.7	415	-100.7	462.4763	-87.7
0.095(0.1)	1.2734	1.389	-4.2	317	-53.2	335.4399	-36.1
0.21(0.22)	1.3238	1.444	-8.3	399	-93.1	427.2395	-73.4
0.41(0.46)	1.4147	1.325	0.6	266	-28.6	283.6453	-15.1
0.98(1.0)	1.4077	1.094	18.0	122	41.1	111.6490	54.7
2.3(2.2)	1.3863	0.753	43.5	46	77.9	26.8144	89.1

<sup>a</sup>Calculated by the reviewer as the change in the natural logarithm of cell density from 0 to 4 days, divided by 4 days.

<sup>b</sup>Calculated by the reviewer as the area under the growth curve.

<sup>c</sup>Calculated by the reviewer as final minus initial cell density.

<sup>d</sup>Calculated by the reviewer relative to the negative control, using the mean values before rounding.

**Data Evaluation Report on the Acute Toxicity of Ipconazole to Algae, *Pseudokirchneriella subcapitata***

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**Table 8: Statistical endpoint values calculated by the reviewer comparing treatments to the negative control and to the solvent control.**

<b>Endpoint</b>	<b>Comparison to the negative control</b>			<b>Comparison to the solvent control</b>		
	Area under the curve (AUC)	Yield	Average Specific Growth Rate	Area under the curve (AUC)	Yield	Average Specific Growth Rate
IC <sub>05</sub> (mg ai/L)	0.73	0.60	0.39	0.20 <sup>c</sup>	0.22 <sup>c</sup>	0.29
IC <sub>05</sub> 95% C.I. (mg ai/L)	0.38 – 1.2	0.27 – 0.92	0.24 – 0.52	N/A – 0.29	N/A – 0.32	0.21 – 0.36
IC <sub>50</sub> (mg ai/L)	1.6 <sup>a</sup>	1.2 <sup>a</sup>	2.5 <sup>b</sup>	0.71	0.65	2.43 <sup>b</sup>
IC <sub>50</sub> 95% C.I. (mg ai/L)	0.93 – N/A	0.77 – N/A	2.1 – 2.9	0.56 – 0.90	0.51 – 0.85	2.16 – 2.73
NOAEC (mg ai/L)	0.41	0.41	0.41	0.21	0.21	0.21
LOAEC (mg ai/L)	0.98	0.98	0.98	0.41	0.41	0.41
Probit slope	N/A	N/A	N/A	N/A	N/A	N/A

\*The solvent control mean measurements for AUC, yield, and average specific growth rate at 96 hours were all statistically higher than corresponding mean measurements for the negative control.

(a) IC<sub>50</sub> value should be interpreted with caution because the 95% confidence limits could not be fully determined

(b) IC<sub>50</sub> value should be interpreted with caution, as it is not bracketed by the test concentrations

(c) IC<sub>05</sub> value should be interpreted with caution because the 95% confidence limits could not be fully determined

#### D. STUDY DEFICIENCIES:

- There were statistically significant differences between the negative and solvent controls for all endpoints, with the solvent control exhibiting promotion of growth as compared to the negative control (55, 75, and 8% for yield, area under the curve, and average specific growth rate, respectively). The solvent appeared to mask the effects of the test material in the first 5 test levels for yield and area under the curve, culminating in actual promotion of growth in yield ranging from 15 to 88% and in area under the curve ranging from 29 to 101%.
- The full dose-response was not captured by the study author when the treatment data are compared to the negative control data. The 0.98 mg ai/L test level was the first to demonstrate inhibitions in growth for yield and area under the curve, with inhibitions already approximately 50% as compared to the negative control. The nonlinear regression analyses conducted for all endpoints indicated significant lack of fit when comparing to both the negative and solvent controls. The analyses for yield and area under the curve compared to the negative control could not produce valid 95% confidence intervals for the IC<sub>50</sub>. In order to adequately capture the IC<sub>50</sub> when comparing to the negative control, a test with concentrations ranging between nominal 1.0 and 2.2 mg ai/L would need to be conducted.

# Data Evaluation Report on the Acute Toxicity of Ipconazole to Algae, *Pseudokirchneriella subcapitata*

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EPA MRID Number 49910310

## E. REVIEWER'S COMMENTS:

The reviewer's NOAEC values were in agreement with those of the study author when treatment data was compared to the solvent control. For average specific growth rate and area under the curve, the reviewer determined a NOAEC value of 0.21g ai/L, in terms of mean measured concentrations, whereas the study author reported a NOAEC value of 0.22 mg ai/L, in terms of nominal concentrations. The study author did not analyze yield data. The study author's IC<sub>50</sub> for area under the curve was slightly lower than the reviewer's and was calculated using the likelihood ratio method whereas the reviewer used nonlinear regression. The reviewer's results are reported in the Executive Summary and Conclusions sections of this report.

The in-life phase of the definitive test was conducted from 08 to 12 August 2005.

The coefficient of variation (CV) of control yield was 12.02%, which meets the guideline requirement of yield CV<15%. The CV of control average specific growth rate was 2.31%, which meets the guideline requirement of average specific growth rate CV<15%.

## F. CONCLUSIONS:

Although this study is scientifically sound, it is classified as supplemental (quantitative) because of the solvent effect resulting in stimulation of growth at the five lowest test concentrations as compared to the negative control. This study can be used quantitatively because there was a dose response in algal growth; however, for the more conservative approach it is recommended to use the IC<sub>50</sub>, NOAEC, and LOAEC values resulting from comparison of the treatments to the solvent control instead of those from comparison to the negative control. After 96 hours, the most sensitive endpoint was yield, with NOAEC and IC<sub>50</sub> values of 0.21 and 0.65 mg ai/L, respectively, based on the mean-measured concentrations comparing the treatments to the solvent control.

## III. REFERENCES:

EC Commission Directive 2004/10/EC of 11 February- 20W (Official Journal No L 50/44).

EC Directive 92/69. Pan C.3 "Algal Inhibition Test' of the EC Methods for Determination of Ecotoxicity; O.J. L383A dated 29 December 1992.

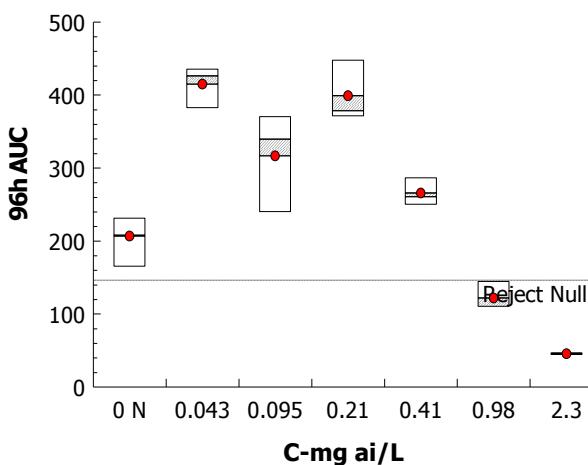
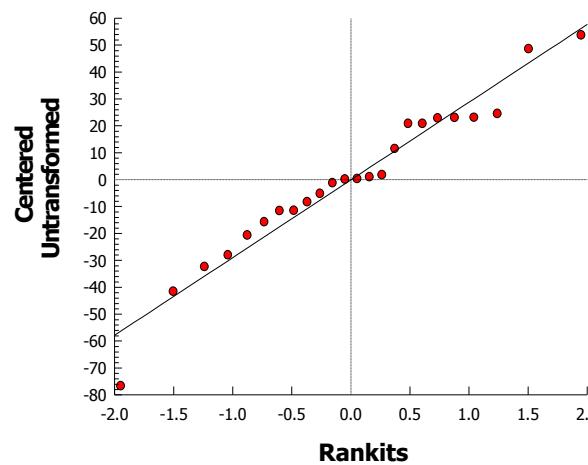
The UK Good Laboratory Practice Regulations (Statutory Instrument 1999 No. 3106, as amended by Statutory Instrument 2004 No 994).

The Japanese Ministry of Agriculture, Forestry and Fisheries, Test Data for Registration of Agricultural Chemicals, 12 Nohsan No 8147. Agricultural Production Bureau, November 24 2000.

Williams. P.A (1986) *Biometrics* 42, 641 5.

# CETIS Analytical Report

Report Date: 28 Apr-17 14:38 (p 1 of 9)  
 Test Code: 125618 49910310 | 08-0679-3942

OCSPP 850.4500 Algal Toxicity							Huntingdon Life Sciences					
Analysis ID:		01-2222-7026	Endpoint:			96h AUC	CETIS Version:		CETISv1.8.7			
Analyzed:		28 Apr-17 13:12	Analysis:			Parametric-Control vs Treatments	Official Results:		Yes			
Batch ID:	14-0071-9714	Test Type:			Algal Cell Growth (96-h)			Analyst:				
Start Date:	08 Aug-05	Protocol:			OCSPP 850.4500 Aquatic Plant (Algae)			Diluent:				
Ending Date:	12 Aug-05	Species:			Pseudokirchneriella subcapitata			Brine:				
Duration:	96h	Source:			Culture Collection of Algae and Protozoa (C			Age:				
Data Transform	Zeta	Alt	Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU		
Untransformed	NA		C > T	NA	NA	29.2%	0.41	0.98	0.6339			
<b>Dunnett Multiple Comparison Test</b>												
Control	vs	C-mg ai/L		Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision( $\alpha:5\%$ )		
Negative Control		0.043		-8.82	2.55	60.3	7	1.0000	CDF	Non-Significant Effect		
		0.095		-4.66	2.55	60.3	7	1.0000	CDF	Non-Significant Effect		
		0.21		-8.15	2.55	60.3	7	1.0000	CDF	Non-Significant Effect		
		0.41		-2.5	2.55	60.3	7	1.0000	CDF	Non-Significant Effect		
		0.98*		3.6	2.55	60.3	7	0.0059	CDF	Significant Effect		
		2.3*		6.82	2.55	60.3	7	<0.0001	CDF	Significant Effect		
<b>ANOVA Table</b>												
Source	Sum Squares		Mean Square		DF	F Stat		P-Value	Decision( $\alpha:5\%$ )			
Between	347833		57972.17		6	52.1		<0.0001	Significant Effect			
Error	18922.15		1113.068		17							
Total	366755.2				23							
<b>Distributional Tests</b>												
Attribute	Test		Test Stat		Critical	P-Value		Decision( $\alpha:1\%$ )				
Variances	Bartlett Equality of Variance		15.2		16.8	0.0186		Equal Variances				
Distribution	Shapiro-Wilk W Normality		0.963		0.884	0.5065		Normal Distribution				
<b>96h AUC Summary</b>												
C-mg ai/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
0	Negative Control	6	207	181	232	208	165	231	9.89	11.7%	0.0%	
0.043		3	415	344	485	426	382	436	16.4	6.85%	-101.0%	
0.095		3	317	147	486	339	240	370	39.3	21.5%	-53.2%	
0.21		3	399	294	504	378	371	448	24.4	10.6%	-93.1%	
0.41		3	266	219	312	261	250	286	10.8	7.07%	-28.6%	
0.98		3	122	72	171	110	110	145	11.5	16.4%	41.1%	
2.3		3	45.6	42.8	48.5	45.8	44.4	46.7	0.66	2.51%	77.9%	
<b>Graphics</b>												
												
												

OCSPP 850.4500 Algal Toxicity							Huntingdon Life Sciences					
Analysis ID:		18-4067-8397	Endpoint:			96h AUC	CETIS Version:		CETISv1.8.7			
Analyzed:		28 Apr-17 13:13	Analysis:			Parametric-Control vs Ord.Treatments	Official Results:		Yes			
Batch ID:	14-0071-9714	Test Type:			Algal Cell Growth (96-h)			Analyst:				
Start Date:	08 Aug-05	Protocol:			OCSPP 850.4500 Aquatic Plant (Algae)			Diluent:				
Ending Date:	12 Aug-05	Species:			Pseudokirchneriella subcapitata			Brine:				
Duration:	96h	Source:			Culture Collection of Algae and Protozoa (C			Age:				
Data Transform	Zeta	Alt	Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU		
Untransformed	NA	C > T	NA	NA		21.1%	0.41	0.98	0.6339			
<b>Williams Multiple Comparison Test</b>												
Control	vs	C-mg ai/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision( $\alpha:5\%$ )			
Negative Control	0.043		-8.82	1.74	41	7	>0.05	CDF	Non-Significant Effect			
	0.095		-4.66	1.81	42.7	7	>0.05	CDF	Non-Significant Effect			
	0.21		-6.41	1.83	43.2	7	>0.05	CDF	Non-Significant Effect			
	0.41		-2.5	1.84	43.4	7	>0.05	CDF	Non-Significant Effect			
	0.98*		3.6	1.85	43.6	7	<0.05	CDF	Significant Effect			
	2.3*		6.82	1.85	43.6	7	<0.05	CDF	Significant Effect			
<b>ANOVA Table</b>												
Source	Sum Squares		Mean Square		DF	F Stat		P-Value	Decision( $\alpha:5\%$ )			
Between	347833		57972.17		6	52.1		<0.0001	Significant Effect			
Error	18922.15		1113.068		17							
Total	366755.2				23							
<b>Distributional Tests</b>												
Attribute	Test		Test Stat	Critical	P-Value	Decision( $\alpha:1\%$ )						
Variances	Bartlett Equality of Variance		15.2	16.8	0.0186	Equal Variances						
Distribution	Shapiro-Wilk W Normality		0.963	0.884	0.5065	Normal Distribution						
<b>96h AUC Summary</b>												
C-mg ai/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
0	Negative Control	6	207	181	232	208	165	231	9.89	11.7%	0.0%	
0.043		3	415	344	485	426	382	436	16.4	6.85%	-101.0%	
0.095		3	317	147	486	339	240	370	39.3	21.5%	-53.2%	
0.21		3	399	294	504	378	371	448	24.4	10.6%	-93.1%	
0.41		3	266	219	312	261	250	286	10.8	7.07%	-28.6%	
0.98		3	122	72	171	110	110	145	11.5	16.4%	41.1%	
2.3		3	45.6	42.8	48.5	45.8	44.4	46.7	0.66	2.51%	77.9%	
<b>Graphics</b>												

**CETIS Analytical Report**

Report Date: 28 Apr-17 14:38 (p 3 of 9)  
 Test Code: 125618 49910310 | 08-0679-3942

**OCSPP 850.4500 Algal Toxicity****Huntingdon Life Sciences**

<b>Analysis ID:</b> 10-0563-2107	<b>Endpoint:</b> 96h AUC	<b>CETIS Version:</b> CETISv1.8.7
<b>Analyzed:</b> 28 Apr-17 13:13	<b>Analysis:</b> Parametric-Two Sample	<b>Official Results:</b> Yes
<b>Batch ID:</b> 14-0071-9714	<b>Test Type:</b> Algal Cell Growth (96-h)	<b>Analyst:</b>
<b>Start Date:</b> 08 Aug-05	<b>Protocol:</b> OCSPP 850.4500 Aquatic Plant (Algae)	<b>Diluent:</b> Algal Culture Media
<b>Ending Date:</b> 12 Aug-05	<b>Species:</b> Pseudokirchneriella subcapitata	<b>Brine:</b>
<b>Duration:</b> 96h	<b>Source:</b> Culture Collection of Algae and Protozoa (C	<b>Age:</b>

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C <> T	NA	NA	18.1%	Fails 96h auc

**Equal Variance t Two-Sample Test**

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision( $\alpha:5\%$ )
Negative Control	Solvent Blank		9.26	2.23	37.3	10	<0.0001	CDF	Significant Effect

**ANOVA Table**

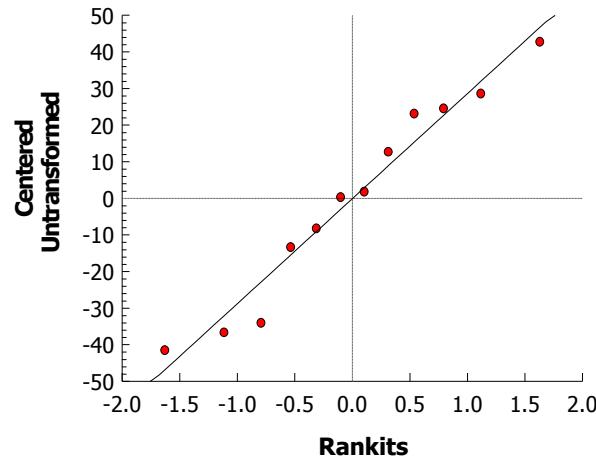
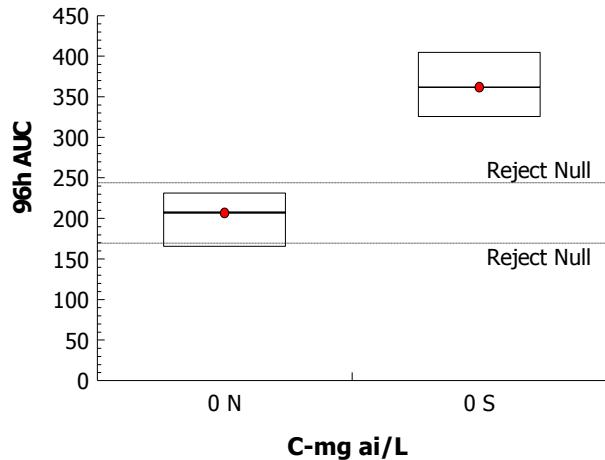
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha:5\%$ )
Between	72210.3	72210.3	1	85.8	<0.0001	Significant Effect
Error	8418.655	841.8655	10			
Total	80628.96		11			

**Distributional Tests**

Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha:1\%$ )
Variances	Variance Ratio F	1.87	14.9	0.5087	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.948	0.802	0.6097	Normal Distribution

**96h AUC Summary**

C-mg ai/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Solvent Blank	6	362	327	397	361	325	405	13.5	9.16%	0.0%
0	Negative Control	6	207	181	232	208	165	231	9.89	11.7%	42.9%

**Graphics**

OCSPP 850.4500 Algal Toxicity							Huntingdon Life Sciences					
Analysis ID:		10-5521-7402	Endpoint:			96h Cell Density	CETIS Version:		CETISv1.8.7			
Analyzed:		28 Apr-17 13:12	Analysis:			Parametric-Control vs Treatments	Official Results:		Yes			
Batch ID:	14-0071-9714	Test Type:			Algal Cell Growth (96-h)		Analyst:					
Start Date:	08 Aug-05	Protocol:			OCSPP 850.4500 Aquatic Plant (Algae)		Diluent:					
Ending Date:	12 Aug-05	Species:			Pseudokirchneriella subcapitata		Brine:					
Duration:	96h	Source:			Culture Collection of Algae and Protozoa (C		Age:					
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU			
Untransformed	NA	C > T	NA	NA	30.8%	0.41	0.98	0.6339				
<b>Dunnett Multiple Comparison Test</b>												
Control	vs	C-mg ai/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision( $\alpha:5\%$ )			
Negative Control	0.043		-7.27	2.55	75.9	7	1.0000	CDF	Non-Significant Effect			
	0.095		-3	2.55	75.9	7	1.0000	CDF	Non-Significant Effect			
	0.21		-6.09	2.55	75.9	7	1.0000	CDF	Non-Significant Effect			
	0.41		-1.25	2.55	75.9	7	0.9981	CDF	Non-Significant Effect			
	0.98*		4.54	2.55	75.9	7	0.0008	CDF	Significant Effect			
	2.3*		7.39	2.55	75.9	7	<0.0001	CDF	Significant Effect			
<b>ANOVA Table</b>												
Source	Sum Squares		Mean Square		DF	F Stat		P-Value	Decision( $\alpha:5\%$ )			
Between	454548.3		75758.05		6	42.9		<0.0001	Significant Effect			
Error	30018.74		1765.808		17							
Total	484567.1				23							
<b>Distributional Tests</b>												
Attribute	Test		Test Stat	Critical	P-Value	Decision( $\alpha:1\%$ )						
Variances	Bartlett Equality of Variance		14.2	16.8	0.0276	Equal Variances						
Distribution	Shapiro-Wilk W Normality		0.96	0.884	0.4309	Normal Distribution						
<b>96h Cell Density Summary</b>												
C-mg ai/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
0	Negative Control	6	246	215	278	251	202	280	12.1	12.0%	0.0%	
0.043		3	462	329	596	481	402	504	30.9	11.6%	-87.7%	
0.095		3	335	137	534	381	243	382	46.1	23.8%	-36.1%	
0.21		3	427	313	542	404	397	480	26.6	10.8%	-73.4%	
0.41		3	284	203	364	299	246	306	18.7	11.4%	-15.1%	
0.98		3	112	63	160	100	100	134	11.3	17.5%	54.7%	
2.3		3	26.8	22.8	30.9	26.7	25.3	28.5	0.941	6.08%	89.1%	
<b>Graphics</b>												

OCSPP 850.4500 Algal Toxicity								Huntingdon Life Sciences								
Analysis ID:		18-1762-8303	Endpoint: 96h Cell Density Analysis: Parametric-Control vs Ord.Treatments				CETIS Version:		CETISv1.8.7							
Analyzed:		28 Apr-17 13:13					Official Results:		Yes							
Batch ID:	14-0071-9714	Test Type: Algal Cell Growth (96-h)				Analyst:										
Start Date:	08 Aug-05	Protocol: OCSPP 850.4500 Aquatic Plant (Algae)				Diluent: Algal Culture Media										
Ending Date:	12 Aug-05	Species: Pseudokirchneriella subcapitata				Brine:										
Duration:	96h	Source: Culture Collection of Algae and Protozoa (C				Age:										
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU							
Untransformed	NA	C > T	NA	NA	22.3%	0.41	0.98	0.6339								
<b>Williams Multiple Comparison Test</b>																
Control	vs	C-mg ai/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision( $\alpha:5\%$ )							
Negative Control		0.043	-7.27	1.74	51.7	7	>0.05	CDF	Non-Significant Effect							
		0.095	-3	1.81	53.8	7	>0.05	CDF	Non-Significant Effect							
		0.21	-4.54	1.83	54.4	7	>0.05	CDF	Non-Significant Effect							
		0.41	-1.25	1.84	54.7	7	>0.05	CDF	Non-Significant Effect							
		0.98*	4.54	1.85	54.9	7	<0.05	CDF	Significant Effect							
		2.3*	7.39	1.85	54.9	7	<0.05	CDF	Significant Effect							
<b>ANOVA Table</b>																
Source	Sum Squares		Mean Square		DF	F Stat		P-Value	Decision( $\alpha:5\%$ )							
Between	454548.3		75758.05		6	42.9		<0.0001	Significant Effect							
Error	30018.74		1765.808		17											
Total	484567.1				23											
<b>Distributional Tests</b>																
Attribute	Test		Test Stat		Critical	P-Value		Decision( $\alpha:1\%$ )								
Variances	Bartlett Equality of Variance		14.2		16.8	0.0276		Equal Variances								
Distribution	Shapiro-Wilk W Normality		0.96		0.884	0.4309		Normal Distribution								
<b>96h Cell Density Summary</b>																
C-mg ai/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect					
0	Negative Control	6	246	215	278	251	202	280	12.1	12.0%	0.0%					
0.043		3	462	329	596	481	402	504	30.9	11.6%	-87.7%					
0.095		3	335	137	534	381	243	382	46.1	23.8%	-36.1%					
0.21		3	427	313	542	404	397	480	26.6	10.8%	-73.4%					
0.41		3	284	203	364	299	246	306	18.7	11.4%	-15.1%					
0.98		3	112	63	160	100	100	134	11.3	17.5%	54.7%					
2.3		3	26.8	22.8	30.9	26.7	25.3	28.5	0.941	6.08%	89.1%					
<b>Graphics</b>																

**CETIS Analytical Report**

Report Date: 28 Apr-17 14:38 (p 6 of 9)  
 Test Code: 125618 49910310 | 08-0679-3942

**OCSPP 850.4500 Algal Toxicity** Huntingdon Life Sciences

<b>Analysis ID:</b> 10-0412-6487	<b>Endpoint:</b> 96h Cell Density	<b>CETIS Version:</b> CETISv1.8.7
<b>Analyzed:</b> 28 Apr-17 13:13	<b>Analysis:</b> Parametric-Two Sample	<b>Official Results:</b> Yes
<b>Batch ID:</b> 14-0071-9714	<b>Test Type:</b> Algal Cell Growth (96-h)	<b>Analyst:</b>
<b>Start Date:</b> 08 Aug-05	<b>Protocol:</b> OCSPP 850.4500 Aquatic Plant (Algae)	<b>Diluent:</b> Algal Culture Media
<b>Ending Date:</b> 12 Aug-05	<b>Species:</b> Pseudokirchneriella subcapitata	<b>Brine:</b>
<b>Duration:</b> 96h	<b>Source:</b> Culture Collection of Algae and Protozoa (C	<b>Age:</b>

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C <> T	NA	NA	20.5%	Fails 96h cell density

**Equal Variance t Two-Sample Test**

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision( $\alpha:5\%$ )
Negative Control	Solvent Blank		6.02	2.23	50.5	10	0.0001	CDF	Significant Effect

**ANOVA Table**

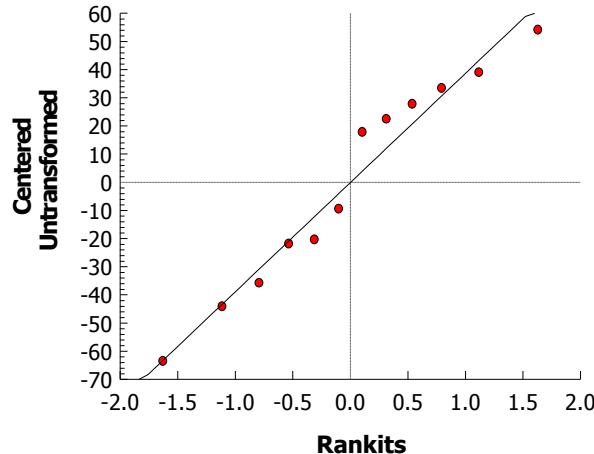
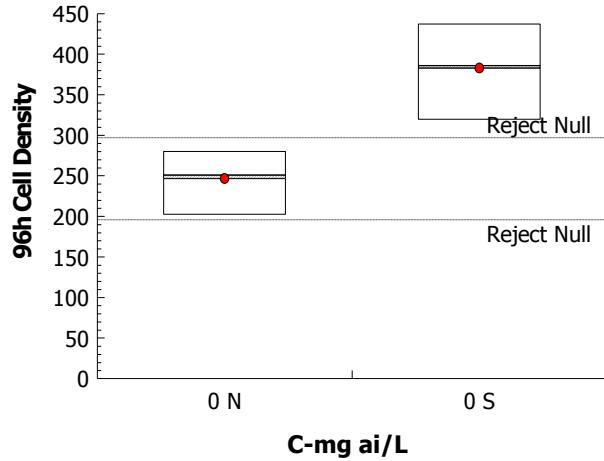
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha:5\%$ )
Between	55874.09	55874.09	1	36.3	0.0001	Significant Effect
Error	15399.07	1539.907	10			
Total	71273.16		11			

**Distributional Tests**

Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha:1\%$ )
Variances	Variance Ratio F	2.51	14.9	0.3358	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.95	0.802	0.6317	Normal Distribution

**96h Cell Density Summary**

C-mg ai/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Solvent Blank	6	383	334	432	386	319	437	19.2	12.3%	0.0%
0	Negative Control	6	246	215	278	251	202	280	12.1	12.0%	35.6%

**Graphics**

OCSPP 850.4500 Algal Toxicity							Huntingdon Life Sciences					
Analysis ID:		15-7921-5532	Endpoint:			96h Growth Rate	CETIS Version:		CETISv1.8.7			
Analyzed:		28 Apr-17 13:12	Analysis:			Parametric-Control vs Treatments	Official Results:		Yes			
Batch ID:	14-0071-9714	Test Type:			Algal Cell Growth (96-h)		Analyst:					
Start Date:	08 Aug-05	Protocol:			OCSPP 850.4500 Aquatic Plant (Algae)		Diluent:					
Ending Date:	12 Aug-05	Species:			Pseudokirchneriella subcapitata		Brine:					
Duration:	96h	Source:			Culture Collection of Algae and Protozoa (C		Age:					
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU			
Untransformed	NA	C > T	NA	NA	4.87%	0.41	0.98	0.6339				
<b>Dunnett Multiple Comparison Test</b>												
Control	vs	C-mg ai/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision( $\alpha:5\%$ )			
Negative Control	0.043		-6.14	2.55	0.065	7	1.0000	CDF	Non-Significant Effect			
	0.095		-2.17	2.55	0.065	7	0.9999	CDF	Non-Significant Effect			
	0.21		-4.33	2.55	0.065	7	1.0000	CDF	Non-Significant Effect			
	0.41		0.347	2.55	0.065	7	0.8113	CDF	Non-Significant Effect			
	0.98*		9.43	2.55	0.065	7	<0.0001	CDF	Significant Effect			
	2.3*		22.8	2.55	0.065	7	<0.0001	CDF	Significant Effect			
<b>ANOVA Table</b>												
Source	Sum Squares		Mean Square		DF	F Stat		P-Value	Decision( $\alpha:5\%$ )			
Between	1.206826		0.2011378		6	156		<0.0001	Significant Effect			
Error	0.02197883		0.001292873		17							
Total	1.228805				23							
<b>Distributional Tests</b>												
Attribute	Test		Test Stat	Critical	P-Value	Decision( $\alpha:1\%$ )						
Variances	Bartlett Equality of Variance		4.26	16.8	0.6410	Equal Variances						
Distribution	Shapiro-Wilk W Normality		0.959	0.884	0.4202	Normal Distribution						
<b>96h Growth Rate Summary</b>												
C-mg ai/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
0	Negative Control	6	1.33	1.3	1.37	1.34	1.29	1.37	0.0126	2.31%	0.0%	
0.043		3	1.49	1.42	1.56	1.5	1.46	1.51	0.0174	2.02%	-11.7%	
0.095		3	1.39	1.23	1.55	1.43	1.31	1.43	0.0375	4.68%	-4.14%	
0.21		3	1.44	1.38	1.51	1.43	1.43	1.47	0.015	1.8%	-8.26%	
0.41		3	1.33	1.25	1.4	1.34	1.29	1.35	0.0171	2.23%	0.66%	
0.98		3	1.09	0.991	1.2	1.07	1.07	1.14	0.024	3.8%	18.0%	
2.3		3	0.753	0.717	0.789	0.752	0.739	0.768	0.00839	1.93%	43.5%	
<b>Graphics</b>												

# CETIS Analytical Report

Report Date: 28 Apr-17 14:38 (p 8 of 9)  
 Test Code: 125618 49910310 | 08-0679-3942

OCSPP 850.4500 Algal Toxicity							Huntingdon Life Sciences					
Analysis ID:		01-8605-0580	Endpoint:			96h Growth Rate	CETIS Version:		CETISv1.8.7			
Analyzed:		28 Apr-17 13:13	Analysis:			Parametric-Control vs Ord.Treatments	Official Results:		Yes			
Batch ID:	14-0071-9714	Test Type:			Algal Cell Growth (96-h)		Analyst:					
Start Date:	08 Aug-05	Protocol:			OCSPP 850.4500 Aquatic Plant (Algae)		Diluent:					
Ending Date:	12 Aug-05	Species:			Pseudokirchneriella subcapitata		Brine:					
Duration:	96h	Source:			Culture Collection of Algae and Protozoa (C		Age:					
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU			
Untransformed	NA	C > T	NA	NA	3.52%	0.41	0.98	0.6339				
<b>Williams Multiple Comparison Test</b>												
Control	vs	C-mg ai/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision( $\alpha:5\%$ )			
Negative Control		0.043	-6.14	1.74	0.044	7	>0.05	CDF	Non-Significant Effect			
		0.095	-2.17	1.81	0.046	7	>0.05	CDF	Non-Significant Effect			
		0.21	-3.25	1.83	0.047	7	>0.05	CDF	Non-Significant Effect			
		0.41	0.347	1.84	0.047	7	>0.05	CDF	Non-Significant Effect			
		0.98*	9.43	1.85	0.047	7	<0.05	CDF	Significant Effect			
		2.3*	22.8	1.85	0.047	7	<0.05	CDF	Significant Effect			
<b>ANOVA Table</b>												
Source	Sum Squares		Mean Square		DF	F Stat		P-Value	Decision( $\alpha:5\%$ )			
Between	1.206826		0.2011378		6	156		<0.0001	Significant Effect			
Error	0.02197883		0.001292873		17							
Total	1.228805				23							
<b>Distributional Tests</b>												
Attribute	Test		Test Stat	Critical	P-Value	Decision( $\alpha:1\%$ )						
Variances	Bartlett Equality of Variance		4.26	16.8	0.6410	Equal Variances						
Distribution	Shapiro-Wilk W Normality		0.959	0.884	0.4202	Normal Distribution						
<b>96h Growth Rate Summary</b>												
C-mg ai/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
0	Negative Control	6	1.33	1.3	1.37	1.34	1.29	1.37	0.0126	2.31%	0.0%	
0.043		3	1.49	1.42	1.56	1.5	1.46	1.51	0.0174	2.02%	-11.7%	
0.095		3	1.39	1.23	1.55	1.43	1.31	1.43	0.0375	4.68%	-4.14%	
0.21		3	1.44	1.38	1.51	1.43	1.43	1.47	0.015	1.8%	-8.26%	
0.41		3	1.33	1.25	1.4	1.34	1.29	1.35	0.0171	2.23%	0.66%	
0.98		3	1.09	0.991	1.2	1.07	1.07	1.14	0.024	3.8%	18.0%	
2.3		3	0.753	0.717	0.789	0.752	0.739	0.768	0.00839	1.93%	43.5%	
<b>Graphics</b>												

**CETIS Analytical Report**

Report Date: 28 Apr-17 14:38 (p 9 of 9)  
 Test Code: 125618 49910310 | 08-0679-3942

**OCSPP 850.4500 Algal Toxicity****Huntingdon Life Sciences**

<b>Analysis ID:</b> 17-9150-4938	<b>Endpoint:</b> 96h Growth Rate	<b>CETIS Version:</b> CETISv1.8.7
<b>Analyzed:</b> 28 Apr-17 13:13	<b>Analysis:</b> Parametric-Two Sample	<b>Official Results:</b> Yes
<b>Batch ID:</b> 14-0071-9714	<b>Test Type:</b> Algal Cell Growth (96-h)	<b>Analyst:</b>
<b>Start Date:</b> 08 Aug-05	<b>Protocol:</b> OCSPP 850.4500 Aquatic Plant (Algae)	<b>Diluent:</b> Algal Culture Media
<b>Ending Date:</b> 12 Aug-05	<b>Species:</b> Pseudokirchneriella subcapitata	<b>Brine:</b>
<b>Duration:</b> 96h	<b>Source:</b> Culture Collection of Algae and Protozoa (C	<b>Age:</b>

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C <> T	NA	NA	2.98%	Fails 96h growth rate

**Equal Variance t Two-Sample Test**

Control	vs	Control	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision( $\alpha:5\%$ )
Negative Control	Solvent Blank		6.07	2.23	0.04	10	0.0001	CDF	Significant Effect

**ANOVA Table**

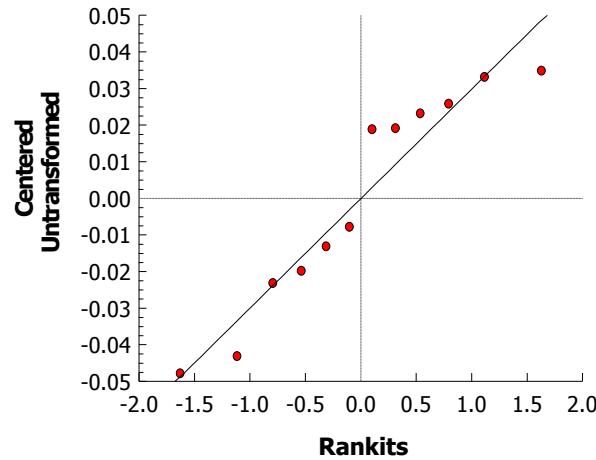
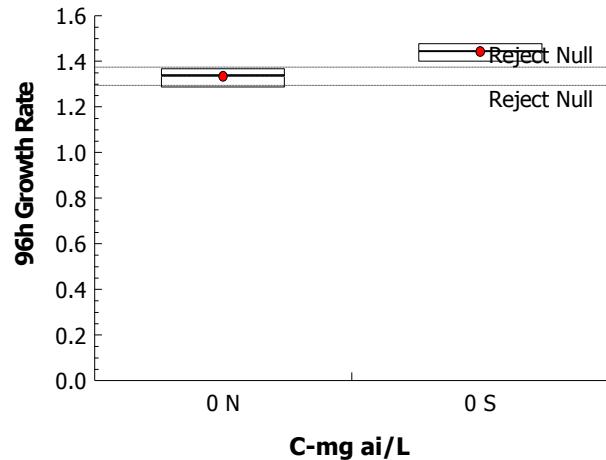
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha:5\%$ )
Between	0.03520833	0.03520833	1	36.8	0.0001	Significant Effect
Error	0.009555667	0.0009555666	10			
Total	0.044764		11			

**Distributional Tests**

Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha:1\%$ )
Variances	Variance Ratio F	1.01	14.9	0.9890	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.901	0.802	0.1610	Normal Distribution

**96h Growth Rate Summary**

C-mg ai/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Solvent Blank	6	1.44	1.41	1.47	1.44	1.4	1.48	0.0127	2.15%	0.0%
0	Negative Control	6	1.33	1.3	1.37	1.34	1.29	1.37	0.0126	2.31%	7.51%

**Graphics**

**CETIS Analytical Report**

**Report Date:** 28 Apr-17 14:40 (p 1 of 6)  
**Test Code:** 125618 49910310 | 08-0679-3942

OCSPP 850.4500 Algal Toxicity							Huntingdon Life Sciences					
<b>Analysis ID:</b> 18-0924-9800	<b>Endpoint:</b> 96h AUC				<b>CETIS Version:</b> CETISv1.8.7							
<b>Analyzed:</b> 28 Apr-17 13:12	<b>Analysis:</b> Nonlinear Regression				<b>Official Results:</b> Yes							
<b>Batch ID:</b> 14-0071-9714	<b>Test Type:</b> Algal Cell Growth (96-h)				<b>Analyst:</b>							
<b>Start Date:</b> 08 Aug-05	<b>Protocol:</b> OCSPP 850.4500 Aquatic Plant (Algae)				<b>Diluent:</b> Algal Culture Media							
<b>Ending Date:</b> 12 Aug-05	<b>Species:</b> Pseudokirchneriella subcapitata				<b>Brine:</b>							
<b>Duration:</b> 96h	<b>Source:</b> Culture Collection of Algae and Protozoa (C				<b>Age:</b>							
<b>Non-Linear Regression Options</b>												
<b>Model Function</b>				<b>X Transform</b>	<b>Y Transform</b>	<b>Weighting Function</b>	<b>PTBS Function</b>					
3P Cumulative Log-Normal EV [Y=A*(1- Φ(log(X/D)/C))]				None	None	Normal [W=1]	Off [Y*=Y]					
<b>Regression Summary</b>												
Iters	Log LL	AICc	BIC	Adj R2	Optimize	F Stat	Critical	P-Value	Decision( $\alpha$ :5%)			
61	-116	240	242	0.5688	No	28.2	2.96	0.0000	Significant Lack of Fit			
<b>Point Estimates</b>												
Level	mg ai/L	95% LCL	95% UCL									
IC5	0.726	0.379	1.15									
IC10	0.787	0.459	1.24									
IC15	0.851	0.527	1.34									
IC20	0.92	0.587	1.48									
IC25	0.995	0.641	1.68									
IC40	1.28	0.793	N/A									
IC50	1.58	0.931	N/A									
<b>Regression Parameters</b>												
Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision( $\alpha$ :5%)					
A	307	22.1	264	350	13.9	<0.0001	Significant Parameter					
C	0.621	0.331	-0.0271	1.27	1.88	0.0743	Non-Significant Parameter					
D	0.882	0.203	0.485	1.28	4.35	0.0003	Significant Parameter					
<b>ANOVA Table</b>												
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha$ :5%)						
Model	222371.2	222371.2	1	32.3	<0.0001	Significant						
Lack of Fit	125461.8	31365.45	4	28.2	<0.0001	Significant						
Pure Error	18922.15	1113.068	17									
Residual	144384	6875.426	21									
<b>Residual Analysis</b>												
Attribute	Method		Test Stat	Critical	P-Value	Decision( $\alpha$ :5%)						
Variances	Bartlett Equality of Variance		15.2	12.6	0.0186	Unequal Variances						
	Mod Levene Equality of Variance		1.43	3.09	0.2887	Equal Variances						
Distribution	Shapiro-Wilk W Normality		0.97	0.917	0.6597	Normal Distribution						
	Anderson-Darling A2 Normality		0.291	2.49	0.6384	Normal Distribution						
<b>96h AUC Summary</b>					<b>Calculated Variate</b>							
C-mg ai/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect			
0	Negative Control	6	207	165	231	9.89	24.2	11.7%	0.0%			
0.043		3	415	382	436	16.4	28.4	6.85%	-101.0%			
0.095		3	317	240	370	39.3	68.1	21.5%	-53.2%			
0.21		3	399	371	448	24.4	42.3	10.6%	-93.1%			
0.41		3	266	250	286	10.8	18.8	7.07%	-28.6%			
0.98		3	122	110	145	11.5	20	16.4%	41.1%			
2.3		3	45.6	44.4	46.7	0.66	1.14	2.51%	77.9%			

## OCSPP 850.4500 Algal Toxicity

Huntingdon Life Sciences

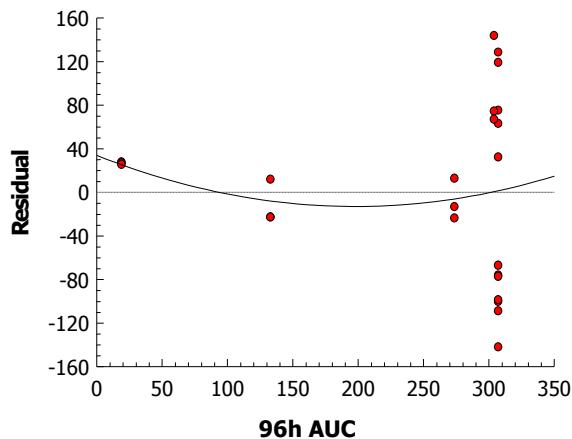
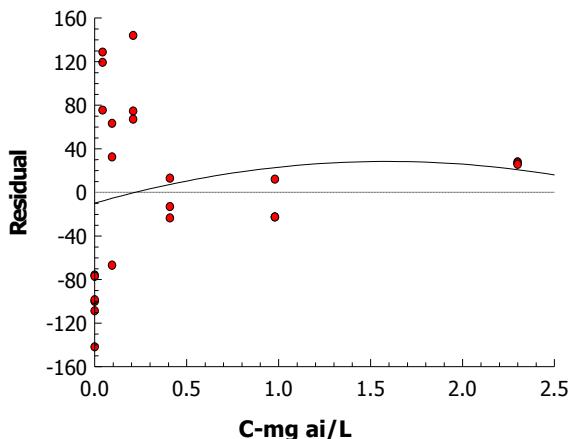
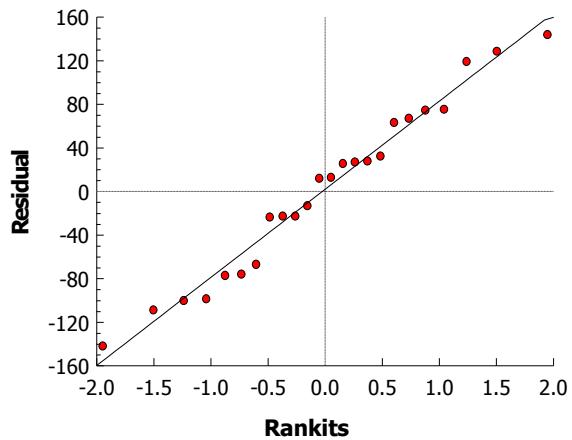
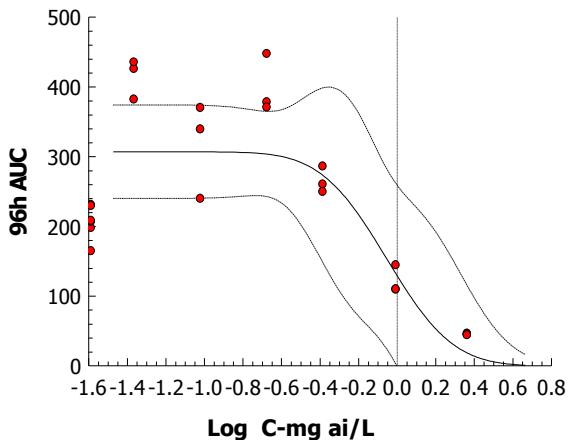
 Analysis ID: 18-0924-9800  
 Analyzed: 28 Apr-17 13:12

 Endpoint: 96h AUC  
 Analysis: Nonlinear Regression

 CETIS Version: CETISv1.8.7  
 Official Results: Yes

## Graphics

3P Cumulative Log-Normal EV [Y=A\*(1- Φ(log(X/D)/C))]



**CETIS Analytical Report**

**Report Date:** 28 Apr-17 14:40 (p 3 of 6)  
**Test Code:** 125618 49910310 | 08-0679-3942

OCSPP 850.4500 Algal Toxicity								Huntingdon Life Sciences						
<b>Analysis ID:</b> 14-6601-7450	<b>Endpoint:</b> 96h Cell Density				<b>CETIS Version:</b> CETISv1.8.7									
<b>Analyzed:</b> 28 Apr-17 13:12	<b>Analysis:</b> Nonlinear Regression				<b>Official Results:</b> Yes									
<b>Batch ID:</b> 14-0071-9714	<b>Test Type:</b> Algal Cell Growth (96-h)				<b>Analyst:</b>									
<b>Start Date:</b> 08 Aug-05	<b>Protocol:</b> OCSPP 850.4500 Aquatic Plant (Algae)				<b>Diluent:</b> Algal Culture Media									
<b>Ending Date:</b> 12 Aug-05	<b>Species:</b> Pseudokirchneriella subcapitata				<b>Brine:</b>									
<b>Duration:</b> 96h	<b>Source:</b> Culture Collection of Algae and Protozoa (C				<b>Age:</b>									
<b>Non-Linear Regression Options</b>														
<b>Model Function</b>				<b>X Transform</b>	<b>Y Transform</b>	<b>Weighting Function</b>	<b>PTBS Function</b>							
3P Cumulative Log-Normal EV [Y=A*(1- Φ(log(X/D)/C))]				None	None	Normal [W=1]	Off [Y*=Y]							
<b>Regression Summary</b>														
<b>Iters</b>	<b>Log LL</b>	<b>AICc</b>	<b>BIC</b>	<b>Adj R2</b>	<b>Optimize</b>	<b>F Stat</b>	<b>Critical</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>					
63	-117	242	244	0.6527	No	17.5	2.96	0.0000	Significant Lack of Fit					
<b>Point Estimates</b>														
<b>Level</b>	<b>mg ai/L</b>	<b>95% LCL</b>	<b>95% UCL</b>											
IC5	0.601	0.265	0.923											
IC10	0.647	0.361	0.981											
IC15	0.695	0.429	1.04											
IC20	0.745	0.486	1.12											
IC25	0.799	0.538	1.22											
IC40	0.992	0.674	1.92											
IC50	1.17	0.772	N/A											
<b>Regression Parameters</b>														
<b>Parameter</b>	<b>Estimate</b>	<b>Std Error</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>t Stat</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>							
A	342	22.8	297	386	15	<0.0001	Significant Parameter							
C	0.553	0.272	0.0197	1.09	2.03	0.0549	Non-Significant Parameter							
D	0.768	0.157	0.461	1.07	4.9	<0.0001	Significant Parameter							
<b>ANOVA Table</b>														
<b>Source</b>	<b>Sum Squares</b>	<b>Mean Square</b>	<b>DF</b>	<b>F Stat</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>								
Model	330894.3	330894.3	1	45.2	<0.0001	Significant								
Lack of Fit	123654.1	30913.52	4	17.5	<0.0001	Significant								
Pure Error	30018.74	1765.808	17											
Residual	153672.8	7317.753	21											
<b>Residual Analysis</b>														
<b>Attribute</b>	<b>Method</b>		<b>Test Stat</b>	<b>Critical</b>	<b>P-Value</b>	<b>Decision(α:5%)</b>								
Variances	Bartlett Equality of Variance		14.2	12.6	0.0276	Unequal Variances								
	Mod Levene Equality of Variance		0.749	3.09	0.6232	Equal Variances								
Distribution	Shapiro-Wilk W Normality		0.964	0.917	0.5214	Normal Distribution								
	Anderson-Darling A2 Normality		0.358	2.49	0.4576	Normal Distribution								
<b>96h Cell Density Summary</b>					<b>Calculated Variate</b>									
<b>C-mg ai/L</b>	<b>Control Type</b>	<b>Count</b>	<b>Mean</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>Std Dev</b>	<b>CV%</b>	<b>%Effect</b>					
0	Negative Control	6	246	202	280	12.1	29.6	12.0%	0.0%					
0.043		3	462	402	504	30.9	53.6	11.6%	-87.7%					
0.095		3	335	243	382	46.1	79.8	23.8%	-36.1%					
0.21		3	427	397	480	26.6	46.1	10.8%	-73.4%					
0.41		3	284	246	306	18.7	32.5	11.4%	-15.1%					
0.98		3	112	100	134	11.3	19.6	17.5%	54.7%					
2.3		3	26.8	25.3	28.5	0.941	1.63	6.08%	89.1%					

## OCSPP 850.4500 Algal Toxicity

Huntingdon Life Sciences

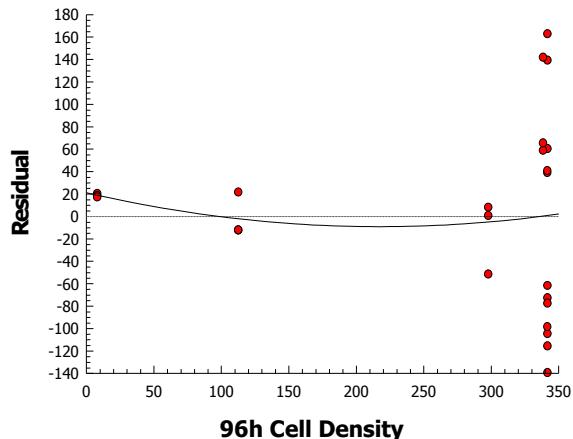
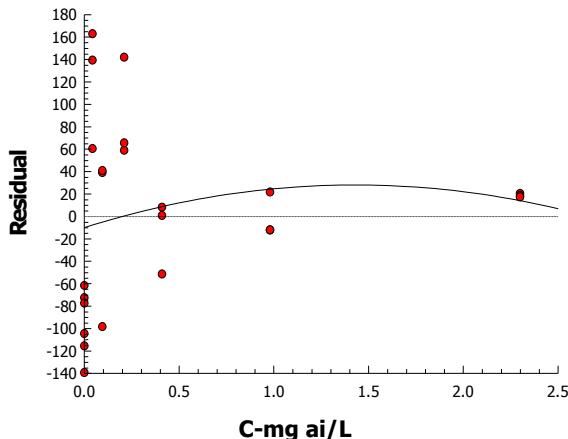
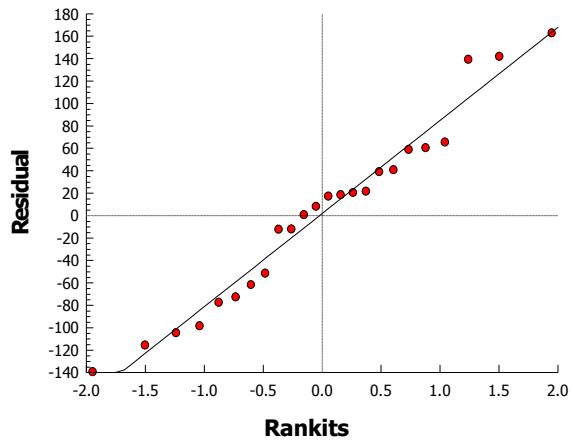
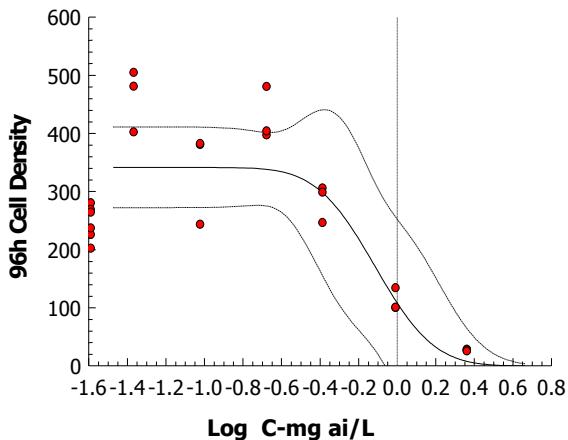
Analysis ID: 14-6601-7450  
 Analyzed: 28 Apr-17 13:12

Endpoint: 96h Cell Density  
 Analysis: Nonlinear Regression

CETIS Version: CETISv1.8.7  
 Official Results: Yes

## Graphics

3P Cumulative Log-Normal EV [Y=A\*(1- Φ(log(X/D)/C))]



**CETIS Analytical Report**

**Report Date:** 28 Apr-17 14:40 (p 5 of 6)  
**Test Code:** 125618 49910310 | 08-0679-3942

**OCSPP 850.4500 Algal Toxicity****Huntingdon Life Sciences**

<b>Analysis ID:</b> 15-2818-2591	<b>Endpoint:</b> 96h Growth Rate	<b>CETIS Version:</b> CETISv1.8.7
<b>Analyzed:</b> 28 Apr-17 13:12	<b>Analysis:</b> Nonlinear Regression	<b>Official Results:</b> Yes
<b>Batch ID:</b> 14-0071-9714	<b>Test Type:</b> Algal Cell Growth (96-h)	<b>Analyst:</b>
<b>Start Date:</b> 08 Aug-05	<b>Protocol:</b> OCSPP 850.4500 Aquatic Plant (Algae)	<b>Diluent:</b> Algal Culture Media
<b>Ending Date:</b> 12 Aug-05	<b>Species:</b> Pseudokirchneriella subcapitata	<b>Brine:</b>
<b>Duration:</b> 96h	<b>Source:</b> Culture Collection of Algae and Protozoa (C	<b>Age:</b>

**Non-Linear Regression Options**

Model Function	X Transform	Y Transform	Weighting Function	PTBS Function
3P Cumulative Log-Normal EV [Y=A*(1- Φ(log(X/D)/C))]	None	None	Normal [W=1]	Off [Y*=Y]

**Regression Summary**

Iters	Log LL	AICc	BIC	Adj R2	Optimize	F Stat	Critical	P-Value	Decision(α:5%)
11	55.5	-104	-101	0.9226	Yes	12.5	2.96	0.0001	Significant Lack of Fit

**Point Estimates**

Level	mg ai/L	95% LCL	95% UCL
IC5	0.393	0.242	0.519
IC10	0.592	0.437	0.741
IC15	0.78	0.622	0.941
IC20	0.972	0.813	1.14
IC25	1.17	1.01	1.34
IC40	1.88	1.66	2.13
IC50	2.51	2.14	2.93

**Regression Parameters**

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(α:5%)
A	1.4	0.0177	1.37	1.43	79.2	<0.0001	Significant Parameter
C	1.13	0.144	0.845	1.41	7.84	<0.0001	Significant Parameter
D	2.51	0.199	2.12	2.9	12.6	<0.0001	Significant Parameter

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Model	1.141972	1.141972	1	276	<0.0001	Significant
Lack of Fit	0.064854	0.016214	4	12.5	<0.0001	Significant
Pure Error	0.021979	0.001293	17			
Residual	0.086833	0.004135	21			

**Residual Analysis**

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)
Variances	Bartlett Equality of Variance	4.26	12.6	0.6410	Equal Variances
	Mod Levene Equality of Variance	0.332	3.09	0.9062	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.969	0.917	0.6462	Normal Distribution
	Anderson-Darling A2 Normality	0.346	2.49	0.4875	Normal Distribution

**96h Growth Rate Summary**

C-mg ai/L	Control Type	Count	Calculated Variate						
			Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	6	1.33	1.29	1.37	0.0126	0.0308	2.31%	0.0%
0.043		3	1.49	1.46	1.51	0.0174	0.0301	2.02%	-11.7%
0.095		3	1.39	1.31	1.43	0.0375	0.065	4.68%	-4.14%
0.21		3	1.44	1.43	1.47	0.015	0.0261	1.8%	-8.26%
0.41		3	1.33	1.29	1.35	0.0171	0.0296	2.23%	0.66%
0.98		3	1.09	1.07	1.14	0.024	0.0416	3.8%	18.0%
2.3		3	0.753	0.739	0.768	0.00839	0.0145	1.93%	43.5%

## OCSPP 850.4500 Algal Toxicity

Huntingdon Life Sciences

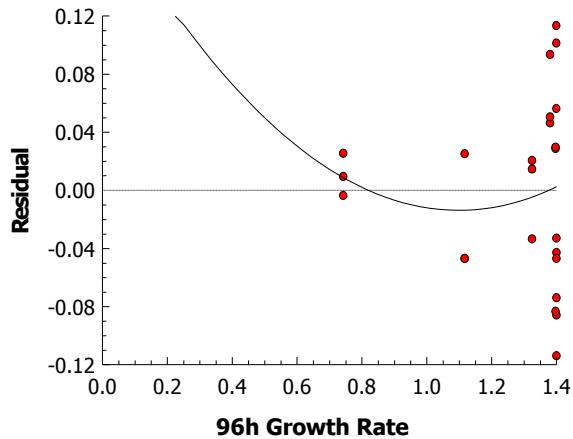
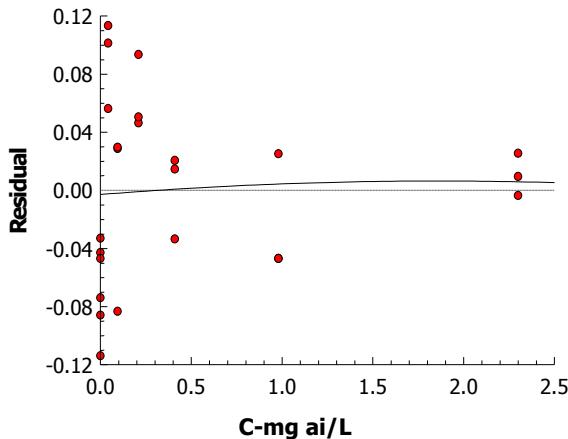
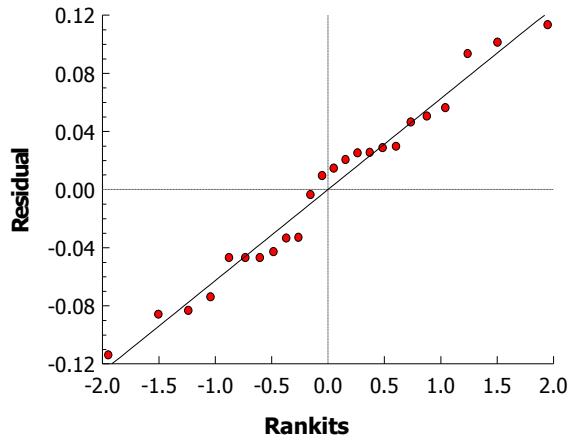
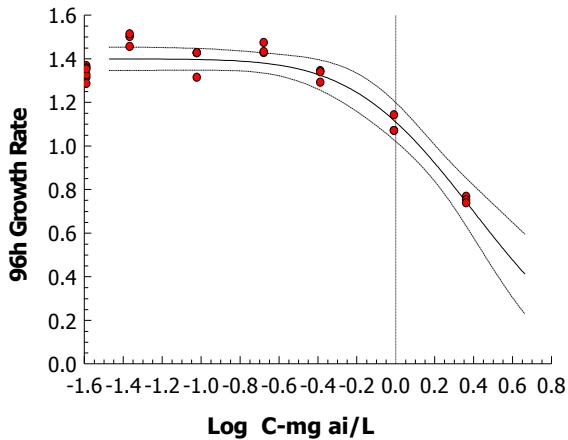
 Analysis ID: 15-2818-2591  
 Analyzed: 28 Apr-17 13:12

 Endpoint: 96h Growth Rate  
 Analysis: Nonlinear Regression

 CETIS Version: CETISv1.8.7  
 Official Results: Yes

## Graphics

3P Cumulative Log-Normal EV [Y=A\*(1- Φ(log(X/D)/C))]



**CETIS Summary Report**

**Report Date:** 28 Apr-17 14:41 (p 1 of 3)  
**Test Code:** 125618 49910310 | 08-0679-3942

OCSPP 850.4500 Algal Toxicity				Huntingdon Life Sciences
<b>Batch ID:</b> 14-0071-9714	<b>Test Type:</b> Algal Cell Growth (96-h)		<b>Analyst:</b>	
<b>Start Date:</b> 08 Aug-05	<b>Protocol:</b> OCSPP 850.4500 Aquatic Plant (Algae)		<b>Diluent:</b>	Algal Culture Media
<b>Ending Date:</b> 12 Aug-05	<b>Species:</b> Pseudokirchneriella subcapitata		<b>Brine:</b>	
<b>Duration:</b> 96h	<b>Source:</b> Culture Collection of Algae and Protozoa (C		<b>Age:</b>	
<b>Sample ID:</b> 01-9709-1907	<b>Code:</b> 49910310		<b>Client:</b>	CDM Smith - K. Bozicevich
<b>Sample Date:</b> 08 Aug-05	<b>Material:</b> Ipcconazole		<b>Project:</b>	
<b>Receive Date:</b>	<b>Source:</b> Kureha Corporation			
<b>Sample Age:</b> NA	<b>Station:</b>			

**Batch Note:** 125618 49910310 static**Sample Note:** 125618 49910310 static**Comparison Summary**

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
10-0563-2107	96h AUC	<0	0		18.1%		Equal Variance t Two-Sample Test
01-2222-7026	96h AUC	0.41	0.98	0.6339	29.2%		Dunnett Multiple Comparison Test
18-4067-8397	96h AUC	0.41	0.98	0.6339	21.1%		Williams Multiple Comparison Test
10-0412-6487	96h Cell Density	<0	0		20.5%		Equal Variance t Two-Sample Test
10-5521-7402	96h Cell Density	0.41	0.98	0.6339	30.8%		Dunnett Multiple Comparison Test
18-1762-8303	96h Cell Density	0.41	0.98	0.6339	22.3%		Williams Multiple Comparison Test
17-9150-4938	96h Growth Rate	<0	0		2.98%		Equal Variance t Two-Sample Test
15-7921-5532	96h Growth Rate	0.41	0.98	0.6339	4.87%		Dunnett Multiple Comparison Test
01-8605-0580	96h Growth Rate	0.41	0.98	0.6339	3.52%		Williams Multiple Comparison Test

**Point Estimate Summary**

Analysis ID	Endpoint	Level	mg ai/L	95% LCL	95% UCL	TU	Method
18-0924-9800	96h AUC	IC5	0.726	0.379	1.15		Nonlinear Regression
		IC10	0.787	0.459	1.24		
		IC15	0.851	0.527	1.34		
		IC20	0.92	0.587	1.48		
		IC25	0.995	0.641	1.68		
		IC40	1.28	0.793	N/A		
		IC50	1.58	0.931	N/A		
14-6601-7450	96h Cell Density	IC5	0.601	0.265	0.923		Nonlinear Regression
		IC10	0.647	0.361	0.981		
		IC15	0.695	0.429	1.04		
		IC20	0.745	0.486	1.12		
		IC25	0.799	0.538	1.22		
		IC40	0.992	0.674	1.92		
		IC50	1.17	0.772	N/A		
15-2818-2591	96h Growth Rate	IC5	0.393	0.242	0.519		Nonlinear Regression
		IC10	0.592	0.437	0.741		
		IC15	0.78	0.622	0.941		
		IC20	0.972	0.813	1.14		
		IC25	1.17	1.01	1.34		
		IC40	1.88	1.66	2.13		
		IC50	2.51	2.14	2.93		

**CETIS Summary Report**

**Report Date:** 28 Apr-17 14:41 (p 2 of 3)  
**Test Code:** 125618 49910310 | 08-0679-3942

**OCSPP 850.4500 Algal Toxicity****Huntingdon Life Sciences****96h AUC Summary**

C-mg ai/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Solvent Blank	6	362	327	397	325	405	13.5	33.1	9.16%	0.0%
0	Negative Control	6	207	181	232	165	231	9.89	24.2	11.7%	42.9%
0.043		3	415	344	485	382	436	16.4	28.4	6.85%	-14.6%
0.095		3	317	147	486	240	370	39.3	68.1	21.5%	12.5%
0.21		3	399	294	504	371	448	24.4	42.3	10.6%	-10.3%
0.41		3	266	219	312	250	286	10.8	18.8	7.07%	26.6%
0.98		3	122	72	171	110	145	11.5	20	16.4%	66.4%
2.3		3	45.6	42.8	48.5	44.4	46.7	0.66	1.14	2.51%	87.4%

**96h Cell Density Summary**

C-mg ai/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Solvent Blank	6	383	334	432	319	437	19.2	46.9	12.3%	0.0%
0	Negative Control	6	246	215	278	202	280	12.1	29.6	12.0%	35.6%
0.043		3	462	329	596	402	504	30.9	53.6	11.6%	-20.8%
0.095		3	335	137	534	243	382	46.1	79.8	23.8%	12.4%
0.21		3	427	313	542	397	480	26.6	46.1	10.8%	-11.6%
0.41		3	284	203	364	246	306	18.7	32.5	11.4%	25.9%
0.98		3	112	63	160	100	134	11.3	19.6	17.5%	70.8%
2.3		3	26.8	22.8	30.9	25.3	28.5	0.941	1.63	6.08%	93.0%

**96h Growth Rate Summary**

C-mg ai/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Solvent Blank	6	1.44	1.41	1.47	1.4	1.48	0.0127	0.031	2.15%	0.0%
0	Negative Control	6	1.33	1.3	1.37	1.29	1.37	0.0126	0.0308	2.31%	7.51%
0.043		3	1.49	1.42	1.56	1.46	1.51	0.0173	0.03	2.02%	-3.32%
0.095		3	1.39	1.23	1.55	1.31	1.43	0.0375	0.065	4.68%	3.69%
0.21		3	1.44	1.38	1.51	1.43	1.47	0.015	0.0261	1.8%	-0.13%
0.41		3	1.33	1.25	1.4	1.29	1.35	0.0171	0.0296	2.23%	8.12%
0.98		3	1.09	0.991	1.2	1.07	1.14	0.024	0.0416	3.8%	24.1%
2.3		3	0.753	0.717	0.789	0.739	0.768	0.00839	0.0145	1.93%	47.8%

**CETIS Summary Report**Report Date: 28 Apr-17 14:41 (p 3 of 3)  
Test Code: 125618 49910310 | 08-0679-3942**OCSPP 850.4500 Algal Toxicity****Huntingdon Life Sciences****96h AUC Detail**

C-mg ai/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6
0	Solvent Blank	348	328	325	405	390	374
0	Negative Control	198	231	165	207	230	208
0.043		426	382	436			
0.095		240	339	370			
0.21		448	378	371			
0.41		286	261	250			
0.98		110	145	110			
2.3		46.7	45.8	44.4			

**96h Cell Density Detail**

C-mg ai/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6
0	Solvent Blank	361	347	319	437	422	411
0	Negative Control	226	280	202	237	269	264
0.043		481	402	504			
0.095		243	381	382			
0.21		480	397	404			
0.41		306	299	246			
0.98		100	134	100			
2.3		28.5	26.7	25.3			

**96h Growth Rate Detail**

C-mg ai/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6
0	Solvent Blank	1.43	1.42	1.4	1.48	1.47	1.46
0	Negative Control	1.31	1.37	1.29	1.33	1.36	1.35
0.043		1.5	1.46	1.51			
0.095		1.31	1.43	1.43			
0.21		1.47	1.43	1.43			
0.41		1.35	1.34	1.29			
0.98		1.07	1.14	1.07			
2.3		0.768	0.752	0.739			

**CETIS Analytical Report**Report Date: 09 Apr-20 09:17 (p 1 of 6)  
Test Code/ID: 125618 49910310 / 08-0679-3942**OCSPP 850.4500 Algal Toxicity****Huntingdon Life Sciences**

<b>Analysis ID:</b> 07-5538-2610	<b>Endpoint:</b> 96h AUC	<b>CETIS Version:</b> CETISv1.9.6
<b>Analyzed:</b> 09 Apr-20 8:43	<b>Analysis:</b> Parametric-Control vs Ord.Treatments	<b>Status Level:</b> 1
<b>Batch ID:</b> 14-0071-9714	<b>Test Type:</b> Algal Cell Growth (96-h)	<b>Analyst:</b>
<b>Start Date:</b> 08 Aug-05	<b>Protocol:</b> OCSPP 850.4500 Aquatic Plant (Algae)	<b>Diluent:</b> Algal Culture Media
<b>Ending Date:</b> 12 Aug-05	<b>Species:</b> Pseudokirchneriella subcapitata	<b>Brine:</b>
<b>Test Length:</b> 96h	<b>Taxon:</b> Chlorophyta	<b>Source:</b> Culture Collection of Algae <b>Age:</b>
<b>Sample ID:</b> 01-9709-1907	<b>Code:</b> 49910310	<b>Project:</b>
<b>Sample Date:</b> 08 Aug-05	<b>Material:</b> Ipcnazole	<b>Source:</b> Kureha Corporation
<b>Receipt Date:</b>	<b>CAS (PC):</b>	<b>Station:</b>
<b>Sample Age:</b> n/a	<b>Client:</b> CDM Smith - K. Bozicevich	

125618 49910310 static

125618 49910310 static

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	0.21	0.41	0.2934		12.84%

**Williams Multiple Comparison Test**

Control	vs	Conc-mg ai/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision( $\alpha:5\%$ )
Solvent Blank		0.043	-2.108	1.74	43.73	7	CDF	>0.05	Non-Significant Effect
		0.095	1.801	1.809	45.46	7	CDF	>0.05	Non-Significant Effect
		0.21	0.1599	1.832	46.04	7	CDF	>0.05	Non-Significant Effect
		0.41*	3.825	1.841	46.27	7	CDF	<0.05	Significant Effect
		0.98*	9.554	1.849	46.47	7	CDF	<0.05	Significant Effect
		2.3*	12.58	1.849	46.47	7	CDF	<0.05	Significant Effect

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha:5\%$ )
Between	380882	63480.3	6	50.25	<1.0E-37	Significant Effect
Error	21474.3	1263.19	17			
Total	402356		23			

**ANOVA Assumptions Tests**

Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha:1\%$ )
Variance	Bartlett Equality of Variance Test	14.39	16.81	0.0256	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.976	0.884	0.8131	Normal Distribution

**96h AUC Summary**

Conc-mg ai/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	S	6	361.8	327	396.5	361.4	325.1	404.5	13.52	9.16%	0.00%
0.043		3	414.8	344.1	485.4	426.3	382.4	435.6	16.41	6.85%	-14.65%
0.095		3	316.5	147.2	485.8	339.4	239.9	370.3	39.34	21.53%	12.51%
0.21		3	399	293.9	504.1	378.3	371	447.7	24.42	10.60%	-10.29%
0.41		3	265.6	219	312.3	260.5	250	286.5	10.85	7.07%	26.57%
0.98		3	121.7	72.02	171.3	110.2	110.1	144.7	11.54	16.42%	66.37%
2.3		3	45.63	42.79	48.48	45.78	44.42	46.69	0.6604	2.51%	87.39%

**96h AUC Detail**

Conc-mg ai/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6
0	S	348.4	327.7	325.1	404.5	390.4	374.5
0.043		426.3	382.4	435.6			
0.095		239.9	339.4	370.3			
0.21		447.7	378.3	371			
0.41		286.5	260.5	250			
0.98		110.2	144.7	110.1			
2.3		46.69	45.78	44.42			

# CETIS Analytical Report

Report Date: 09 Apr-20 09:17 (p 2 of 6)  
Test Code/ID: 125618 49910310 / 08-0679-3942

## OCSPP 850.4500 Algal Toxicity

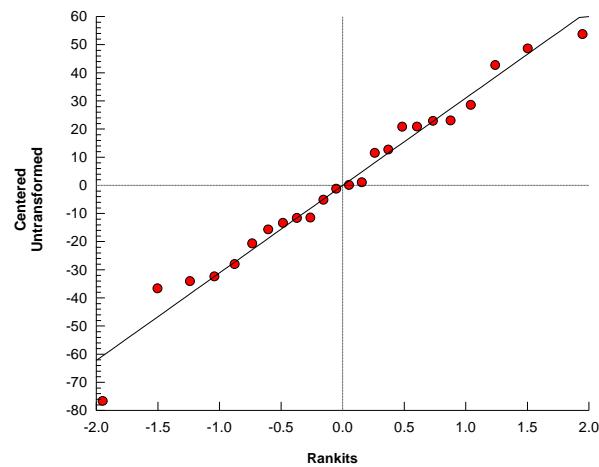
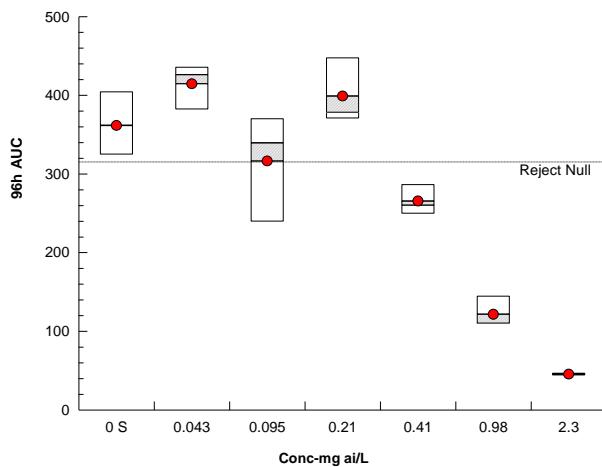
Huntingdon Life Sciences

Analysis ID: 07-5538-2610  
Analyzed: 09 Apr-20 8:43

Endpoint: 96h AUC  
Analysis: Parametric-Control vs Ord.Treatments

CETIS Version: CETISv1.9.6  
Status Level: 1

### Graphics



**CETIS Analytical Report**Report Date: 09 Apr-20 09:17 (p 3 of 6)  
Test Code/ID: 125618 49910310 / 08-0679-3942**OCSPP 850.4500 Algal Toxicity****Huntingdon Life Sciences**

<b>Analysis ID:</b> 05-2517-3946	<b>Endpoint:</b> 96h Cell Density	<b>CETIS Version:</b> CETISv1.9.6
<b>Analyzed:</b> 09 Apr-20 8:43	<b>Analysis:</b> Parametric-Control vs Ord.Treatments	<b>Status Level:</b> 1
<b>Batch ID:</b> 14-0071-9714	<b>Test Type:</b> Algal Cell Growth (96-h)	<b>Analyst:</b>
<b>Start Date:</b> 08 Aug-05	<b>Protocol:</b> OCSPP 850.4500 Aquatic Plant (Algae)	<b>Diluent:</b> Algal Culture Media
<b>Ending Date:</b> 12 Aug-05	<b>Species:</b> Pseudokirchneriella subcapitata	<b>Brine:</b>
<b>Test Length:</b> 96h	<b>Taxon:</b> Chlorophyta	<b>Source:</b> Culture Collection of Algae <b>Age:</b>
<b>Sample ID:</b> 01-9709-1907	<b>Code:</b> 49910310	<b>Project:</b>
<b>Sample Date:</b> 08 Aug-05	<b>Material:</b> Ipcnazole	<b>Source:</b> Kureha Corporation
<b>Receipt Date:</b>	<b>CAS (PC):</b>	<b>Station:</b>
<b>Sample Age:</b> n/a	<b>Client:</b> CDM Smith - K. Bozicevich	

125618 49910310 static

125618 49910310 static

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	0.21	0.41	0.2934		15.85%

**Williams Multiple Comparison Test**

Control	vs	Conc-mg ai/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision( $\alpha:5\%$ )
Solvent Blank		0.043	-2.424	1.74	57.12	7	CDF	>0.05	Non-Significant Effect
		0.095	1.446	1.809	59.38	7	CDF	>0.05	Non-Significant Effect
		0.21	0.04755	1.832	60.14	7	CDF	>0.05	Non-Significant Effect
		0.41*	3.024	1.841	60.43	7	CDF	<0.05	Significant Effect
		0.98*	8.263	1.849	60.7	7	CDF	<0.05	Significant Effect
		2.3*	10.85	1.849	60.7	7	CDF	<0.05	Significant Effect

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha:5\%$ )
Between	503826	83971.1	6	38.96	<1.0E-37	Significant Effect
Error	36638.1	2155.18	17			
Total	540464		23			

**ANOVA Assumptions Tests**

Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha:1\%$ )
Variance	Bartlett Equality of Variance Test	13.16	16.81	0.0406	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9542	0.884	0.3337	Normal Distribution

**96h Cell Density Summary**

Conc-mg ai/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	S	6	382.9	333.7	432.1	385.9	319.4	437	19.16	12.25%	0.00%
0.043		3	462.5	329.3	595.6	480.8	402.1	504.5	30.95	11.59%	-20.78%
0.095		3	335.4	137.1	533.7	380.7	243.3	382.4	46.09	23.80%	12.40%
0.21		3	427.2	312.6	541.8	404	397.4	480.4	26.64	10.80%	-11.58%
0.41		3	283.6	203	364.3	298.6	246.4	306	18.75	11.45%	25.92%
0.98		3	111.6	63.02	160.3	100.5	100.2	134.3	11.3	17.53%	70.84%
2.3		3	26.81	22.76	30.86	26.67	25.26	28.51	0.9411	6.08%	93.00%

**96h Cell Density Detail**

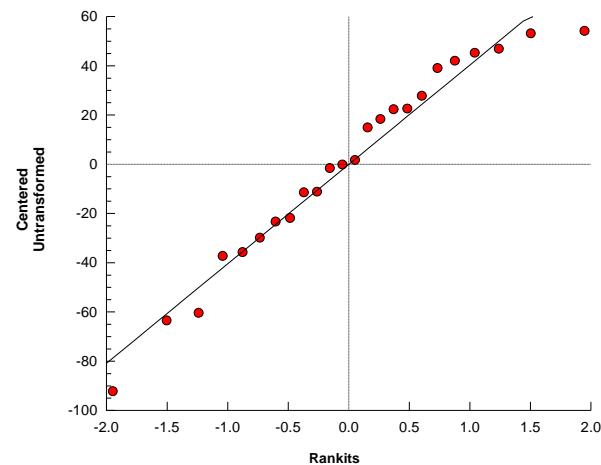
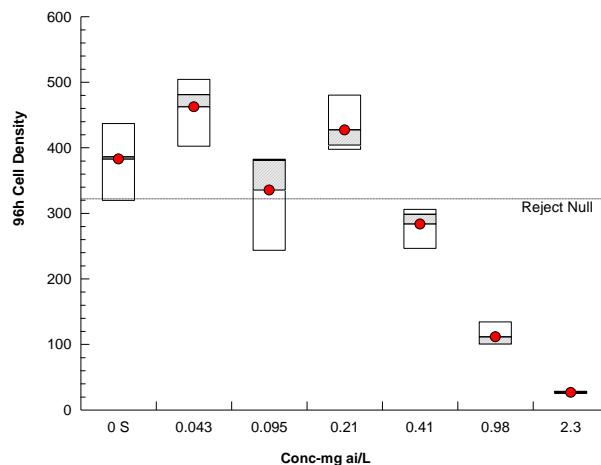
Conc-mg ai/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6
0	S	361.1	347.2	319.4	437	422	410.7
0.043		480.8	402.1	504.5			
0.095		243.3	380.7	382.4			
0.21		480.4	397.4	404			
0.41		306	298.6	246.4			
0.98		100.2	134.3	100.5			
2.3		28.51	26.67	25.26			

## OCSPP 850.4500 Algal Toxicity

Huntingdon Life Sciences

Analysis ID: 05-2517-3946  
Analyzed: 09 Apr-20 8:43Endpoint: 96h Cell Density  
Analysis: Parametric-Control vs Ord.TreatmentsCETIS Version: CETISv1.9.6  
Status Level: 1

## Graphics



**CETIS Analytical Report**Report Date: 09 Apr-20 09:17 (p 5 of 6)  
Test Code/ID: 125618 49910310 / 08-0679-3942**OCSPP 850.4500 Algal Toxicity****Huntingdon Life Sciences**

<b>Analysis ID:</b> 02-0475-6162	<b>Endpoint:</b> 96h Growth Rate	<b>CETIS Version:</b> CETISv1.9.6
<b>Analyzed:</b> 09 Apr-20 8:43	<b>Analysis:</b> Parametric-Control vs Ord.Treatments	<b>Status Level:</b> 1
<b>Batch ID:</b> 14-0071-9714	<b>Test Type:</b> Algal Cell Growth (96-h)	<b>Analyst:</b>
<b>Start Date:</b> 08 Aug-05	<b>Protocol:</b> OCSPP 850.4500 Aquatic Plant (Algae)	<b>Diluent:</b> Algal Culture Media
<b>Ending Date:</b> 12 Aug-05	<b>Species:</b> Pseudokirchneriella subcapitata	<b>Brine:</b>
<b>Test Length:</b> 96h	<b>Taxon:</b> Chlorophyta	<b>Source:</b> Culture Collection of Algae <b>Age:</b>
<b>Sample ID:</b> 01-9709-1907	<b>Code:</b> 49910310	<b>Project:</b>
<b>Sample Date:</b> 08 Aug-05	<b>Material:</b> Ikonazole	<b>Source:</b> Kureha Corporation
<b>Receipt Date:</b>	<b>CAS (PC):</b>	<b>Station:</b>
<b>Sample Age:</b> n/a	<b>Client:</b> CDM Smith - K. Bozicevich	

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Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	0.21	0.41	0.2934		3.26%

**Williams Multiple Comparison Test**

Control	vs	Conc-mg ai/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision( $\alpha:5\%$ )
Solvent Blank		0.043	-1.879	1.74	0.044	7	CDF	>0.05	Non-Significant Effect
		0.095	2.088	1.809	0.046	7	CDF	>0.05	Non-Significant Effect
		0.21	1.008	1.832	0.047	7	CDF	>0.05	Non-Significant Effect
		0.41*	4.602	1.841	0.047	7	CDF	<0.05	Significant Effect
		0.98*	13.67	1.849	0.047	7	CDF	<0.05	Significant Effect
		2.3*	27.07	1.849	0.047	7	CDF	<0.05	Significant Effect

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha:5\%$ )
Between	1.34219	0.223698	6	172.5	<1.0E-37	Significant Effect
Error	0.0220408	0.0012965	17			
Total	1.36423		23			

**ANOVA Assumptions Tests**

Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha:1\%$ )
Variance	Bartlett Equality of Variance Test	4.25	16.81	0.6429	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9546	0.884	0.3395	Normal Distribution

**96h Growth Rate Summary**

Conc-mg ai/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	S	6	1.442	1.41	1.475	1.445	1.399	1.477	0.01266	2.15%	0.00%
0.043		3	1.49	1.415	1.565	1.501	1.456	1.513	0.01735	2.02%	-3.32%
0.095		3	1.389	1.228	1.55	1.426	1.314	1.427	0.0375	4.68%	3.69%
0.21		3	1.444	1.379	1.509	1.431	1.427	1.474	0.01504	1.80%	-0.13%
0.41		3	1.325	1.251	1.399	1.339	1.291	1.345	0.01709	2.23%	8.12%
0.98		3	1.094	0.9907	1.197	1.07	1.07	1.142	0.024	3.80%	24.14%
2.3		3	0.753	0.7169	0.7891	0.752	0.739	0.768	0.008387	1.93%	47.79%

**96h Growth Rate Detail**

Conc-mg ai/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6
0	S	1.429	1.419	1.399	1.477	1.468	1.461
0.043		1.501	1.456	1.513			
0.095		1.314	1.426	1.427			
0.21		1.474	1.427	1.431			
0.41		1.345	1.339	1.291			
0.98		1.07	1.142	1.07			
2.3		0.768	0.752	0.739			

**CETIS Analytical Report**

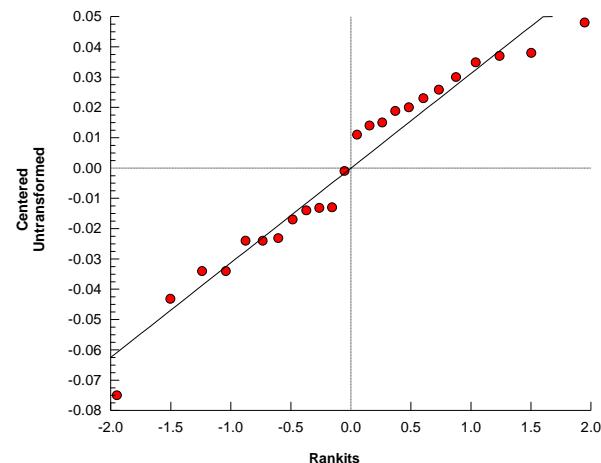
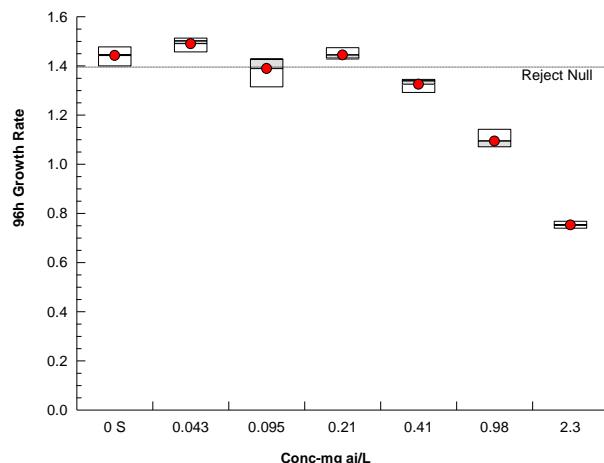
Report Date: 09 Apr-20 09:17 (p 6 of 6)  
Test Code/ID: 125618 49910310 / 08-0679-3942

**OCSPP 850.4500 Algal Toxicity****Huntingdon Life Sciences**

Analysis ID: 02-0475-6162  
Analyzed: 09 Apr-20 8:43

Endpoint: 96h Growth Rate  
Analysis: Parametric-Control vs Ord.Treatments

CETIS Version: CETISv1.9.6  
Status Level: 1

**Graphics**

**CETIS Analytical Report**

**Report Date:** 09 Apr-20 09:17 (p 1 of 6)  
**Test Code/ID:** 125618 49910310 / 08-0679-3942

**OCSPP 850.4500 Algal Toxicity****Huntingdon Life Sciences**

<b>Analysis ID:</b> 13-8017-8086	<b>Endpoint:</b> 96h AUC	<b>CETIS Version:</b> CETISv1.9.6
<b>Analyzed:</b> 09 Apr-20 8:43	<b>Analysis:</b> Nonlinear Regression (NLR)	<b>Status Level:</b> 1
<b>Batch ID:</b> 14-0071-9714	<b>Test Type:</b> Algal Cell Growth (96-h)	<b>Analyst:</b>
<b>Start Date:</b> 08 Aug-05	<b>Protocol:</b> OCSPP 850.4500 Aquatic Plant (Algae)	<b>Diluent:</b> Algal Culture Media
<b>Ending Date:</b> 12 Aug-05	<b>Species:</b> Pseudokirchneriella subcapitata	<b>Brine:</b>
<b>Test Length:</b> 96h	<b>Taxon:</b> Chlorophyta	<b>Source:</b> Culture Collection of Algae <b>Age:</b>
<b>Sample ID:</b> 01-9709-1907	<b>Code:</b> 49910310	<b>Project:</b>
<b>Sample Date:</b> 08 Aug-05	<b>Material:</b> Ipcnazole	<b>Source:</b> Kureha Corporation
<b>Receipt Date:</b>	<b>CAS (PC):</b>	<b>Station:</b>
<b>Sample Age:</b> n/a	<b>Client:</b> CDM Smith - K. Bozicevich	

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**Non-Linear Regression Options**

<b>Model Name and Function</b>		<b>Weighting Function</b>	<b>PTBS Function</b>	<b>X Trans</b>	<b>Y Trans</b>
3P Cum Log-Normal (Probit): $\mu = \alpha \cdot [1 - \Phi[\log[x/\delta]/\gamma]]$		Normal [ $\omega=1$ ]	Off [ $\mu^*=\mu$ ]	None	None

**Regression Summary**

Iters	Log LL	AICc	BIC	Adj R2	PMSD	Thresh	Optimize	F Stat	P-Value	Decision( $\alpha:5\%$ )
8	-91.13	189.5	191.8	0.8756	7.50%	372.2	Yes	4.792	0.0090	Sig Lack of Fit

**Point Estimates**

Level	mg ai/L	95% LCL	95% UCL
IC5	0.1975	n/a	0.2949
IC10	0.2624	n/a	0.3713
IC15	0.3177	0.1729	0.4375
IC20	0.37	0.2352	0.4981
IC25	0.4216	0.2908	0.5565
IC40	0.5858	0.4524	0.7432
IC50	0.7141	0.564	0.904

**Regression Parameters**

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision( $\alpha:5\%$ )
$\alpha$	372.2	13.42	344.3	400.1	27.74	<1.0E-37	Significant Parameter
$\gamma$	0.7813	0.1604	0.4478	1.115	4.872	8.1E-05	Significant Parameter
$\delta$	0.7141	0.08697	0.5332	0.8949	8.21	<1.0E-37	Significant Parameter

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha:5\%$ )
Model	2318000	772500	3	355.1	<1.0E-37	Significant Effect
Lack of Fit	24210	6053	4	4.792	0.0090	Significant Effect
Pure Error	21470	1263	17			
Residual	45690	2176	21			

**Residual Analysis**

Attribute	Method	Test Stat	Critical	P-Value	Decision( $\alpha:5\%$ )
Variance	Bartlett Equality of Variance Test	14.39	12.59	0.0256	Unequal Variances
	Mod Levene Equality of Variance T	1.396	3.095	0.2984	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.5913	2.492	0.1266	Normal Distribution
	Shapiro-Wilk W Normality Test	0.9379	0.9169	0.1464	Normal Distribution

## OCSPP 850.4500 Algal Toxicity

Huntingdon Life Sciences

Analysis ID: 13-8017-8086

Endpoint: 96h AUC

CETIS Version: CETISv1.9.6

Analyzed: 09 Apr-20 8:43

Analysis: Nonlinear Regression (NLR)

Status Level: 1

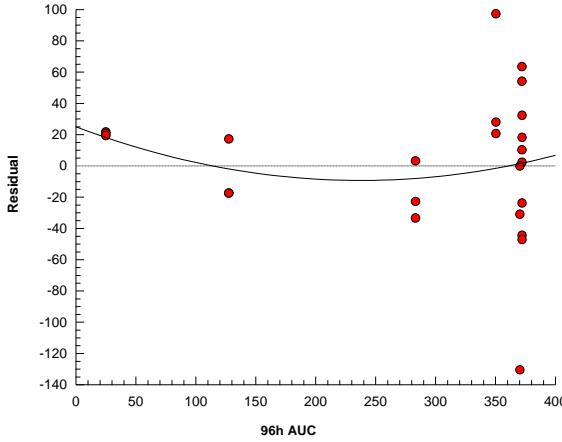
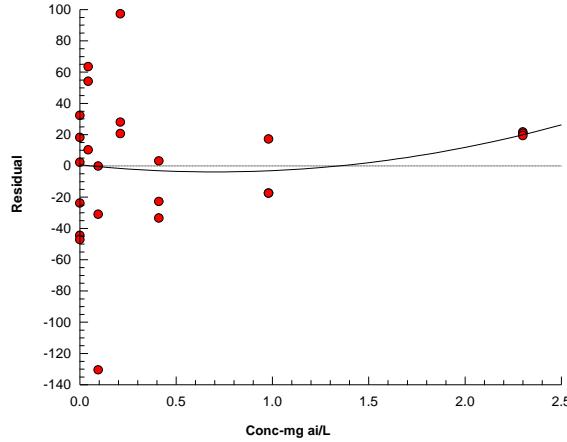
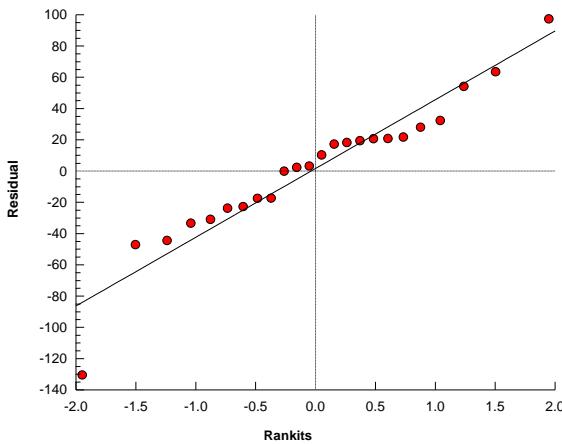
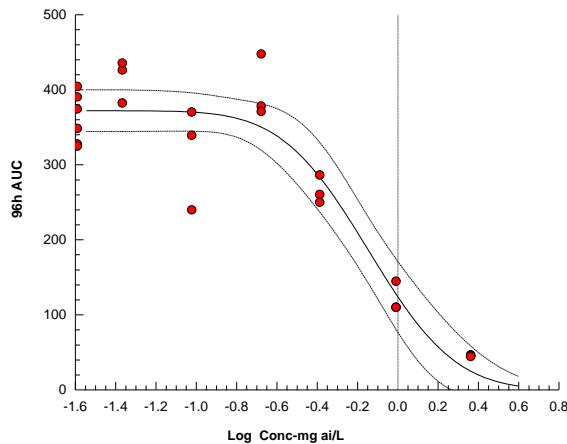
## 96h AUC Summary

Conc-mg ai/L	Code	Count	Calculated Variate						
			Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	S	6	361.8	325.1	404.5	13.52	33.12	9.16%	0.0%
0.043		3	414.8	382.4	435.6	16.41	28.43	6.85%	-14.65%
0.095		3	316.5	239.9	370.3	39.34	68.15	21.53%	12.51%
0.21		3	399	371	447.7	24.42	42.29	10.60%	-10.29%
0.41		3	265.6	250	286.5	10.85	18.79	7.07%	26.57%
0.98		3	121.7	110.1	144.7	11.54	19.98	16.42%	66.37%
2.3		3	45.63	44.42	46.69	0.6604	1.144	2.51%	87.39%

## 96h AUC Detail

Conc-mg ai/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6
0	S	348.4	327.7	325.1	404.5	390.4	374.5
0.043		426.3	382.4	435.6			
0.095		239.9	339.4	370.3			
0.21		447.7	378.3	371			
0.41		286.5	260.5	250			
0.98		110.2	144.7	110.1			
2.3		46.69	45.78	44.42			

## Graphics

Model: 3P Cum Log-Normal (Probit):  $\mu = \alpha \cdot [1 - \Phi(\log[x/\delta]/\gamma)]$  Distribution: Normal [ $\omega=1$ ]

**CETIS Analytical Report**

**Report Date:** 09 Apr-20 09:17 (p 3 of 6)  
**Test Code/ID:** 125618 49910310 / 08-0679-3942

**OCSPP 850.4500 Algal Toxicity****Huntingdon Life Sciences**

<b>Analysis ID:</b> 04-3436-1725	<b>Endpoint:</b> 96h Cell Density	<b>CETIS Version:</b> CETISv1.9.6
<b>Analyzed:</b> 09 Apr-20 8:43	<b>Analysis:</b> Nonlinear Regression (NLR)	<b>Status Level:</b> 1
<b>Batch ID:</b> 14-0071-9714	<b>Test Type:</b> Algal Cell Growth (96-h)	<b>Analyst:</b>
<b>Start Date:</b> 08 Aug-05	<b>Protocol:</b> OCSPP 850.4500 Aquatic Plant (Algae)	<b>Diluent:</b> Algal Culture Media
<b>Ending Date:</b> 12 Aug-05	<b>Species:</b> Pseudokirchneriella subcapitata	<b>Brine:</b>
<b>Test Length:</b> 96h	<b>Taxon:</b> Chlorophyta	<b>Source:</b> Culture Collection of Algae <b>Age:</b>
<b>Sample ID:</b> 01-9709-1907	<b>Code:</b> 49910310	<b>Project:</b>
<b>Sample Date:</b> 08 Aug-05	<b>Material:</b> Ipcnazole	<b>Source:</b> Kureha Corporation
<b>Receipt Date:</b>	<b>CAS (PC):</b>	<b>Station:</b>
<b>Sample Age:</b> n/a	<b>Client:</b> CDM Smith - K. Bozicevich	

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**Non-Linear Regression Options**

Model Name and Function	Weighting Function	PTBS Function	X Trans	Y Trans
3P Cum Log-Normal (Probit): $\mu = \alpha \cdot [1 - \Phi[\log[x/\delta]/\gamma]]$		Normal [ $\omega=1$ ]	Off [ $\mu^*=\mu$ ]	None None

**Regression Summary**

Iters	Log LL	AICc	BIC	Adj R2	PMSD	Thresh	Optimize	F Stat	P-Value	Decision( $\alpha:5\%$ )
9	-96.28	199.8	202.1	0.8578	8.49%	399	Yes	3.893	0.0201	Sig Lack of Fit

**Point Estimates**

Level	mg ai/L	95% LCL	95% UCL
IC5	0.2168	n/a	0.3218
IC10	0.2767	n/a	0.3932
IC15	0.3263	0.1316	0.4528
IC20	0.3719	0.2158	0.5061
IC25	0.4162	0.2722	0.5564
IC40	0.5523	0.4159	0.7129
IC50	0.6549	0.5068	0.8462

**Regression Parameters**

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision( $\alpha:5\%$ )
$\alpha$	399	16.28	365.1	432.9	24.5	<1.0E-37	Significant Parameter
$\gamma$	0.6722	0.1652	0.3285	1.016	4.068	5.5E-04	Significant Parameter
$\delta$	0.6549	0.08482	0.4785	0.8312	7.721	1.5E-07	Significant Parameter

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha:5\%$ )
Model	2654000	884600	3	264.6	<1.0E-37	Significant Effect
Lack of Fit	33560	8389	4	3.893	0.0201	Significant Effect
Pure Error	36640	2155	17			
Residual	70200	3343	21			

**Residual Analysis**

Attribute	Method	Test Stat	Critical	P-Value	Decision( $\alpha:5\%$ )
Variance	Bartlett Equality of Variance Test	13.16	12.59	0.0406	Unequal Variances
	Mod Levene Equality of Variance T	0.69	3.095	0.6628	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.8273	2.492	0.0325	Non-Normal Distribution
	Shapiro-Wilk W Normality Test	0.9274	0.9169	0.0854	Normal Distribution

## OCSPP 850.4500 Algal Toxicity

Huntingdon Life Sciences

Analysis ID: 04-3436-1725

Endpoint: 96h Cell Density

CETIS Version: CETISv1.9.6

Analyzed: 09 Apr-20 8:43

Analysis: Nonlinear Regression (NLR)

Status Level: 1

## 96h Cell Density Summary

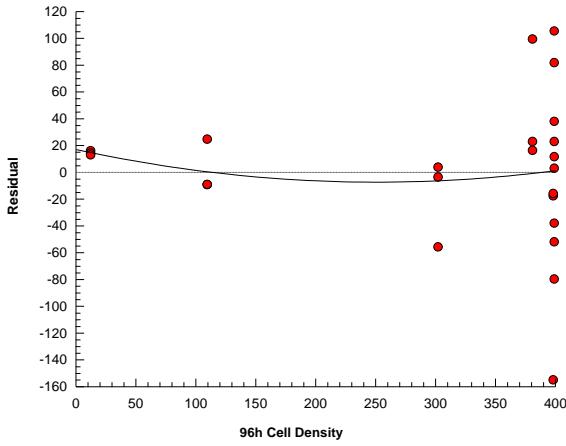
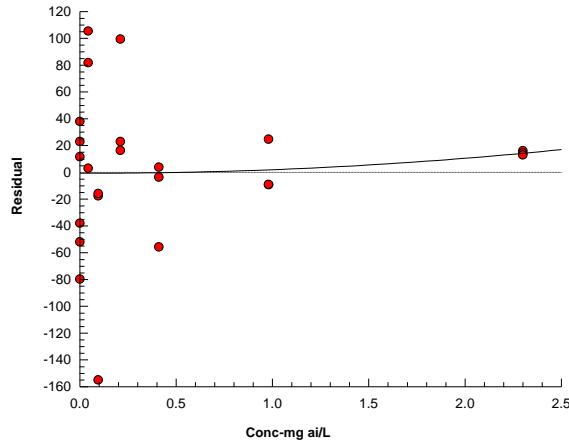
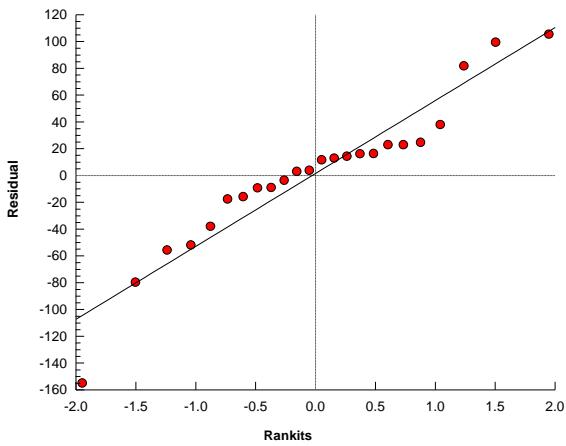
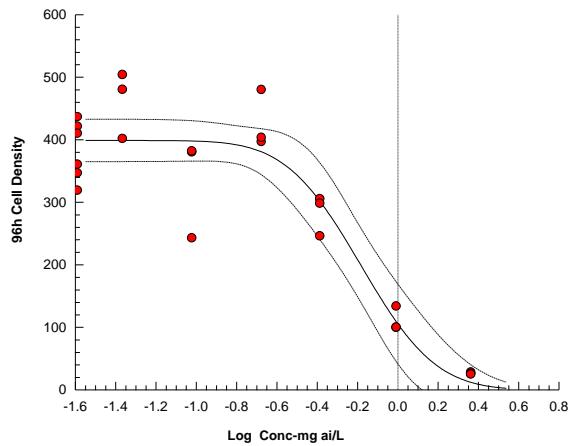
## Calculated Variate

Conc-mg ai/L	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	S	6	382.9	319.4	437	19.16	46.92	12.25%	0.0%
0.043		3	462.5	402.1	504.5	30.95	53.6	11.59%	-20.78%
0.095		3	335.4	243.3	382.4	46.09	79.83	23.80%	12.4%
0.21		3	427.2	397.4	480.4	26.64	46.14	10.80%	-11.58%
0.41		3	283.6	246.4	306	18.75	32.47	11.45%	25.92%
0.98		3	111.6	100.2	134.3	11.3	19.58	17.53%	70.84%
2.3		3	26.81	25.26	28.51	0.9411	1.63	6.08%	93.0%

## 96h Cell Density Detail

Conc-mg ai/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6
0	S	361.1	347.2	319.4	437	422	410.7
0.043		480.8	402.1	504.5			
0.095		243.3	380.7	382.4			
0.21		480.4	397.4	404			
0.41		306	298.6	246.4			
0.98		100.2	134.3	100.5			
2.3		28.51	26.67	25.26			

## Graphics

Model: 3P Cum Log-Normal (Probit):  $\mu = \alpha \cdot [1 - \Phi[\log[x/\delta]/\gamma]]$  Distribution: Normal [ $\omega=1$ ]

**CETIS Analytical Report**

**Report Date:** 09 Apr-20 09:17 (p 5 of 6)  
**Test Code/ID:** 125618 49910310 / 08-0679-3942

**OCSPP 850.4500 Algal Toxicity****Huntingdon Life Sciences**

<b>Analysis ID:</b> 18-5153-4028	<b>Endpoint:</b> 96h Growth Rate	<b>CETIS Version:</b> CETISv1.9.6
<b>Analyzed:</b> 09 Apr-20 8:43	<b>Analysis:</b> Nonlinear Regression (NLR)	<b>Status Level:</b> 1
<b>Batch ID:</b> 14-0071-9714	<b>Test Type:</b> Algal Cell Growth (96-h)	<b>Analyst:</b>
<b>Start Date:</b> 08 Aug-05	<b>Protocol:</b> OCSPP 850.4500 Aquatic Plant (Algae)	<b>Diluent:</b> Algal Culture Media
<b>Ending Date:</b> 12 Aug-05	<b>Species:</b> Pseudokirchneriella subcapitata	<b>Brine:</b>
<b>Test Length:</b> 96h	<b>Taxon:</b> Chlorophyta	<b>Source:</b> Culture Collection of Algae <b>Age:</b>
<b>Sample ID:</b> 01-9709-1907	<b>Code:</b> 49910310	<b>Project:</b>
<b>Sample Date:</b> 08 Aug-05	<b>Material:</b> Ipcnazole	<b>Source:</b> Kureha Corporation
<b>Receipt Date:</b>	<b>CAS (PC):</b>	<b>Station:</b>
<b>Sample Age:</b> n/a	<b>Client:</b> CDM Smith - K. Bozicevich	

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**Non-Linear Regression Options**

Model Name and Function	Weighting Function	PTBS Function	X Trans	Y Trans
3P Cum Log-Normal (Probit): $\mu = \alpha \cdot [1 - \Phi[\log[x/\delta]/\gamma]]$		Normal [ $\omega=1$ ]	Off [ $\mu^*=\mu$ ]	None None

**Regression Summary**

Iters	Log LL	AICc	BIC	Adj R2	PMSD	Thresh	Optimize	F Stat	P-Value	Decision( $\alpha:5\%$ )
4	76.32	-145.4	-143.1	0.9681	1.82%	1.45	Yes	3.422	0.0316	Sig Lack of Fit

**Point Estimates**

Level	mg ai/L	95% LCL	95% UCL
IC5	0.2932	0.2173	0.3638
IC10	0.4677	0.3812	0.5541
IC15	0.6408	0.547	0.7374
IC20	0.8231	0.7246	0.9258
IC25	1.02	0.9175	1.128
IC40	1.753	1.598	1.92
IC50	2.427	2.16	2.727

**Regression Parameters**

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision( $\alpha:5\%$ )
$\alpha$	1.45	0.01271	1.424	1.476	114.1	<1.0E-37	Significant Parameter
$\gamma$	1.285	0.1009	1.075	1.495	12.74	<1.0E-37	Significant Parameter
$\delta$	2.427	0.1355	2.145	2.709	17.91	<1.0E-37	Significant Parameter

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha:5\%$ )
Model	41.72	13.91	3	7340	<1.0E-37	Significant Effect
Lack of Fit	0.01775	0.004437	4	3.422	0.0316	Significant Effect
Pure Error	0.02204	0.001297	17			
Residual	0.03979	0.001895	21			

**Residual Analysis**

Attribute	Method	Test Stat	Critical	P-Value	Decision( $\alpha:5\%$ )
Variance	Bartlett Equality of Variance Test	4.25	12.59	0.6429	Equal Variances
	Mod Levene Equality of Variance T	0.3375	3.095	0.9030	Equal Variances
Distribution	Anderson-Darling A2 Normality Te	0.513	2.492	0.1977	Normal Distribution
	Shapiro-Wilk W Normality Test	0.9265	0.9169	0.0815	Normal Distribution

## OCSPP 850.4500 Algal Toxicity

Huntingdon Life Sciences

Analysis ID: 18-5153-4028

Endpoint: 96h Growth Rate

CETIS Version: CETISv1.9.6

Analyzed: 09 Apr-20 8:43

Analysis: Nonlinear Regression (NLR)

Status Level: 1

## 96h Growth Rate Summary

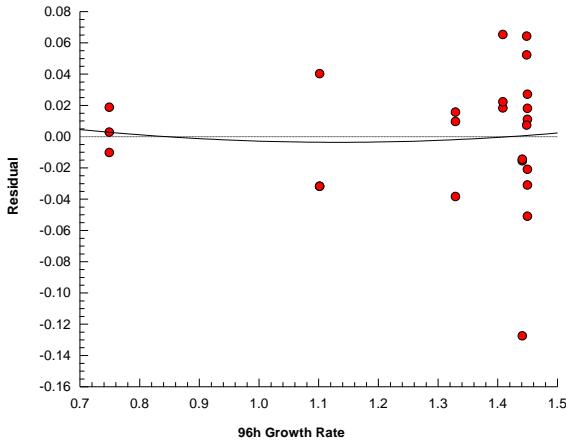
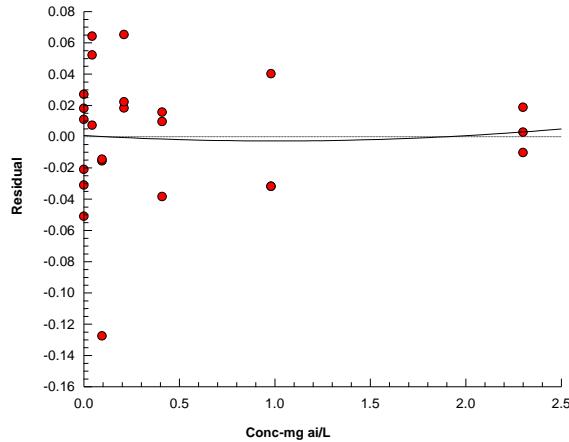
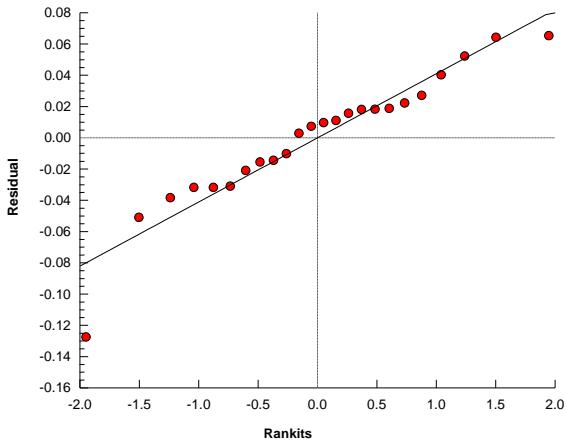
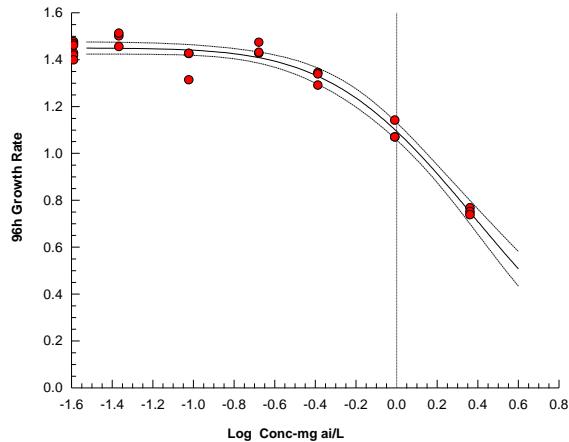
## Calculated Variate

Conc-mg ai/L	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	S	6	1.442	1.399	1.477	0.01266	0.03101	2.15%	0.0%
0.043		3	1.49	1.456	1.513	0.01735	0.03005	2.02%	-3.32%
0.095		3	1.389	1.314	1.427	0.0375	0.06495	4.68%	3.69%
0.21		3	1.444	1.427	1.474	0.01504	0.02606	1.80%	-0.13%
0.41		3	1.325	1.291	1.345	0.01709	0.0296	2.23%	8.12%
0.98		3	1.094	1.07	1.142	0.024	0.04157	3.80%	24.14%
2.3		3	0.753	0.739	0.768	0.008387	0.01453	1.93%	47.79%

## 96h Growth Rate Detail

Conc-mg ai/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6
0	S	1.429	1.419	1.399	1.477	1.468	1.461
0.043		1.501	1.456	1.513			
0.095		1.314	1.426	1.427			
0.21		1.474	1.427	1.431			
0.41		1.345	1.339	1.291			
0.98		1.07	1.142	1.07			
2.3		0.768	0.752	0.739			

## Graphics

Model: 3P Cum Log-Normal (Probit):  $\mu = \alpha \cdot [1 - \Phi[\log[x/\delta]/\gamma]]$  Distribution: Normal [ $\omega=1$ ]

**CETIS Summary Report**

**Report Date:** 09 Apr-20 09:18 (p 1 of 3)  
**Test Code/ID:** 125618 49910310 / 08-0679-3942

OCSPP 850.4500 Algal Toxicity				Huntingdon Life Sciences
<b>Batch ID:</b> 14-0071-9714	<b>Test Type:</b> Algal Cell Growth (96-h)	<b>Analyst:</b>		
<b>Start Date:</b> 08 Aug-05	<b>Protocol:</b> OCSPP 850.4500 Aquatic Plant (Algae)	<b>Diluent:</b>	Algal Culture Media	
<b>Ending Date:</b> 12 Aug-05	<b>Species:</b> Pseudokirchneriella subcapitata	<b>Brine:</b>		
<b>Test Length:</b> 96h	<b>Taxon:</b> Chlorophyta	<b>Source:</b>	Culture Collection of Algae	<b>Age:</b>
<b>Sample ID:</b> 01-9709-1907	<b>Code:</b> 49910310	<b>Project:</b>		
<b>Sample Date:</b> 08 Aug-05	<b>Material:</b> Ipcconazole	<b>Source:</b>	Kureha Corporation	
<b>Receipt Date:</b>	<b>CAS (PC):</b>	<b>Station:</b>		
<b>Sample Age:</b> n/a	<b>Client:</b> CDM Smith - K. Bozicevich			

125618 49910310 static

125618 49910310 static

**Multiple Comparison Summary**

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	TU	PMSD	S
07-5538-2610	96h AUC	Williams Multiple Comparison Test	0.21	0.41	0.2934		12.8%	1
05-2517-3946	96h Cell Density	Williams Multiple Comparison Test	0.21	0.41	0.2934		15.9%	1
02-0475-6162	96h Growth Rate	Williams Multiple Comparison Test	0.21	0.41	0.2934		3.26%	1

**Point Estimate Summary**

Analysis ID	Endpoint	Point Estimate Method	✓ Level	mg ai/L	95% LCL	95% UCL	TU	S
13-8017-8086	96h AUC	NLR: 3P Cum Log-Normal (Probit)	✓ IC5	0.1975	n/a	0.2949		1
			✓ IC10	0.2624	n/a	0.3713		
			✓ IC15	0.3177	0.1729	0.4375		
			✓ IC20	0.37	0.2352	0.4981		
			IC25	0.4216	0.2908	0.5565		
			IC40	0.5858	0.4524	0.7432		
			IC50	0.7141	0.564	0.904		
04-3436-1725	96h Cell Density	NLR: 3P Cum Log-Normal (Probit)	IC5	0.2168	n/a	0.3218		1
			IC10	0.2767	n/a	0.3932		
			IC15	0.3263	0.1316	0.4528		
			IC20	0.3719	0.2158	0.5061		
			✓ IC25	0.4162	0.2722	0.5564		
			✓ IC40	0.5523	0.4159	0.7129		
			✓ IC50	0.6549	0.5068	0.8462		
18-5153-4028	96h Growth Rate	NLR: 3P Cum Log-Normal (Probit)	IC5	0.2932	0.2173	0.3638		1
			IC10	0.4677	0.3812	0.5541		
			IC15	0.6408	0.547	0.7374		
			IC20	0.8231	0.7246	0.9258		
			IC25	1.02	0.9175	1.128		
			IC40	1.753	1.598	1.92		
			IC50	2.427	2.16	2.727		

**CETIS Summary Report**

Report Date:

09 Apr-20 09:18 (p 2 of 3)

Test Code/ID:

125618 49910310 / 08-0679-3942

**OCSPP 850.4500 Algal Toxicity****Huntingdon Life Sciences****96h AUC Summary**

<b>Conc-mg ai/L</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>Std Dev</b>	<b>CV%</b>	<b>%Effect</b>
0	N	6	206.6	181.2	232	165.1	231.2	9.888	24.22	11.72%	0.00%
0	S	6	361.8	327	396.5	325.1	404.5	13.52	33.12	9.16%	-75.08%
0.043		3	414.8	344.1	485.4	382.4	435.6	16.41	28.43	6.85%	-100.73%
0.095		3	316.5	147.2	485.8	239.9	370.3	39.34	68.15	21.53%	-53.18%
0.21		3	399	293.9	504.1	371	447.7	24.42	42.29	10.60%	-93.10%
0.41		3	265.6	219	312.3	250	286.5	10.85	18.79	7.07%	-28.56%
0.98		3	121.7	72.02	171.3	110.1	144.7	11.54	19.98	16.42%	41.12%
2.3		3	45.63	42.79	48.48	44.42	46.69	0.6604	1.144	2.51%	77.92%

**96h Cell Density Summary**

<b>Conc-mg ai/L</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>Std Dev</b>	<b>CV%</b>	<b>%Effect</b>
0	N	6	246.4	215.3	277.5	202.4	279.9	12.1	29.63	12.02%	0.00%
0	S	6	382.9	333.7	432.1	319.4	437	19.16	46.92	12.25%	-55.38%
0.043		3	462.5	329.3	595.6	402.1	504.5	30.95	53.6	11.59%	-87.67%
0.095		3	335.4	137.1	533.7	243.3	382.4	46.09	79.83	23.80%	-36.12%
0.21		3	427.2	312.6	541.8	397.4	480.4	26.64	46.14	10.80%	-73.37%
0.41		3	283.6	203	364.3	246.4	306	18.75	32.47	11.45%	-15.10%
0.98		3	111.6	63.02	160.3	100.2	134.3	11.3	19.58	17.53%	54.69%
2.3		3	26.81	22.76	30.86	25.26	28.51	0.9411	1.63	6.08%	89.12%

**96h Growth Rate Summary**

<b>Conc-mg ai/L</b>	<b>Code</b>	<b>Count</b>	<b>Mean</b>	<b>95% LCL</b>	<b>95% UCL</b>	<b>Min</b>	<b>Max</b>	<b>Std Err</b>	<b>Std Dev</b>	<b>CV%</b>	<b>%Effect</b>
0	N	6	1.334	1.301	1.366	1.286	1.367	0.01258	0.03081	2.31%	0.00%
0	S	6	1.442	1.41	1.475	1.399	1.477	0.01266	0.03101	2.15%	-8.12%
0.043		3	1.49	1.415	1.565	1.456	1.513	0.01735	0.03005	2.02%	-11.71%
0.095		3	1.389	1.228	1.55	1.314	1.427	0.0375	0.06495	4.68%	-4.14%
0.21		3	1.444	1.379	1.509	1.427	1.474	0.01504	0.02606	1.80%	-8.26%
0.41		3	1.325	1.251	1.399	1.291	1.345	0.01709	0.0296	2.23%	0.66%
0.98		3	1.094	0.9907	1.197	1.07	1.142	0.024	0.04157	3.80%	17.98%
2.3		3	0.753	0.7169	0.7891	0.739	0.768	0.008386	0.01453	1.93%	43.55%

**CETIS Summary Report**Report Date: 09 Apr-20 09:18 (p 3 of 3)  
Test Code/ID: 125618 49910310 / 08-0679-3942**OCSPP 850.4500 Algal Toxicity****Huntingdon Life Sciences****96h AUC Detail**

Conc-mg ai/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6
0	N	198.4	231.2	165.1	206.9	229.8	208.4
0	S	348.4	327.7	325.1	404.5	390.4	374.5
0.043		426.3	382.4	435.6			
0.095		239.9	339.4	370.3			
0.21		447.7	378.3	371			
0.41		286.5	260.5	250			
0.98		110.2	144.7	110.1			
2.3		46.69	45.78	44.42			

**96h Cell Density Detail**

Conc-mg ai/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6
0	N	226.1	279.9	202.4	237	268.9	264.2
0	S	361.1	347.2	319.4	437	422	410.7
0.043		480.8	402.1	504.5			
0.095		243.3	380.7	382.4			
0.21		480.4	397.4	404			
0.41		306	298.6	246.4			
0.98		100.2	134.3	100.5			
2.3		28.51	26.67	25.26			

**96h Growth Rate Detail**

Conc-mg ai/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6
0	N	1.314	1.367	1.286	1.326	1.357	1.353
0	S	1.429	1.419	1.399	1.477	1.468	1.461
0.043		1.501	1.456	1.513			
0.095		1.314	1.426	1.427			
0.21		1.474	1.427	1.431			
0.41		1.345	1.339	1.291			
0.98		1.07	1.142	1.07			
2.3		0.768	0.752	0.739			